Electricity on the Farm

A Monthly Magazine for the Progressive Rural Family

April
1931

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For Equipment Dealers and Power Company Representatives

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Join us in the General Electric Hour broadcast every Saturday evening over a nationwide N. B. C. network.

Fig. 2557

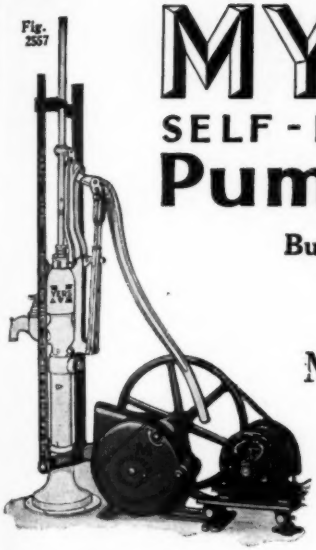

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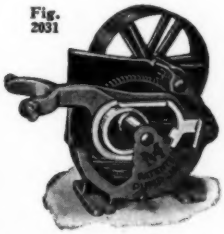
Fig. 2031



One-piece casting serves as oil reservoir and completely houses all gears and working parts, protecting them from dirt, rain, ice, sleet or snow. Perfect and continuous lubrication without care or attention.

Fig. 2619

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Electricity on the Farm

APRIL, 1931
Vol. 4 No. 4

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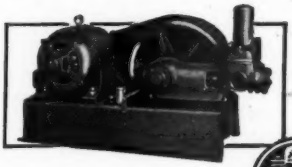

F-M Electric Motor driven typhoon. A shallow well duplex pump made in sizes 600 to 5000 gallons per hour. Built to withstand 100 pounds pressure, the equivalent of 230 feet. Also available with "Z" Engine drive.

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Slow, improper cooling is costing dairy farmers millions of dollars—dollars which can be saved. And added to profits.

Kelvinator can show you how to turn this loss into a profit. In thousands of installations throughout the country Kelvinator-equipped Milk Coolers *have paid for themselves.*

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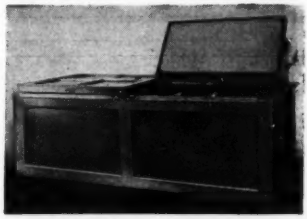

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Kelvinator

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14280 Plymouth Road, Detroit, Michigan

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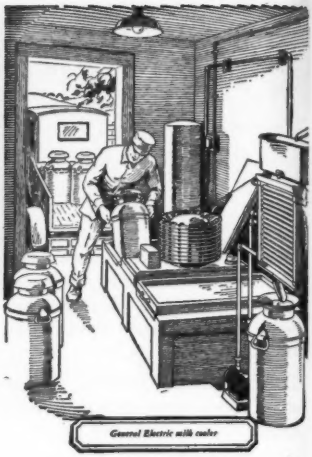

There are 200 practical uses of electricity and of General Electric equipment in farming. Consult your electric power company—find out which of these labor-savers will bring you the greatest immediate profit.

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GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

ELECTRICITY ON THE FARM

APRIL, 1931

Increasing the Age of Usefulness

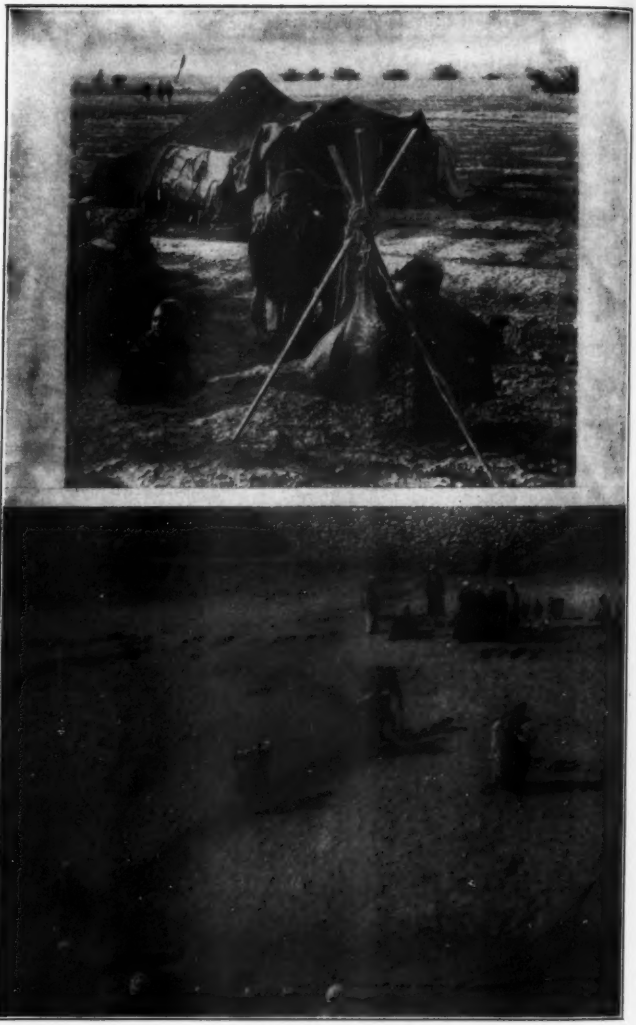
While industrialists assert that a man's usefulness nowadays in industry is rapidly reduced after he passes his fortieth year, it is quite gratifying to note that, on the farm, man's period of useful service has actually increased in recent years.

A great deal of credit for this latter condition belongs to labor saving machinery which has been made available for farm use. The number of men beyond the three score and ten mark who are actively engaged in carrying on farm operations is remarkable. And the future promises even a greater percentage.

While modern cultivating and harvesting machinery reduces manual labor to a large degree, a still greater effect is produced by the application of electricity to farm chores. The pumping and carrying of water, sawing wood, fanning grain, grinding feed, and many other chores, which formerly required considerable elbow grease, have been reduced, through utilization of electric current and electric motors, to a point where they require a neglible amount of physical effort.

Not only has the daily grind been eased up, but farm life is rapidly approaching that of the city in its comforts and conveniences through the introduction of modern electrical household equipment.

With its natural advantages, including fresh air and sunshine, together with the absence of the noise of the city, street dust and other factors which contribute to physical discomfort on the part of the city dweller, the farmer of the future may be expected to live not only a longer life, but one of greater happiness as well.



Upper: "Rural" Water Supply in Algiers (Africa)

A Bedouin Camp in the desert showing water skin full of water from which child is getting a drink.

Lower: Carrying Water in Egypt

In Egypt, the land of enchantment, all is not leisure. Here are shown water carriers leaving the bank of the Nile after having filled water skins in which they carry water for household use.

Quantity and Quality Must be Considered in

FARM WATER SUPPLY

By E. W. LEHMANN *

"MY bathroom and sanitary equipment were worth $100.00 a day when we all had the flu," was the answer given by a Missouri farmer's wife to the question, "What is running water in the home worth to your family?" Complete water service to be of greatest value must meet three requirements:

1. It should be pure, that is, free from contamination, so that it may be used for drinking purposes with safety.

2. It should be adequate as to quantity, because no one likes to skimp when water is used.

3. It should be convenient, which is dependent on the completeness of the plumbing system.

In times of sickness it is difficult to put a money value on running water in the home. The average person gives little thought to the water supply as long as it is adequate. In town the water service company is expected to not only supply all the water that is wanted, when it is wanted, but also is expected to see that it is pure. Complete water service in the country should also be available when wanted and it should be safe to drink.

Function of Water System

The function of an automatic electric water system in the farm home is to provide water service the same as a water service company provides water under pressure in town. The farmer in buying such a piece of equipment and the salesman in selling it should think of it as being something more than a pumping unit. The salesman is selling and the farmer is buying water service. The completeness of the service will determine the satisfaction obtained.

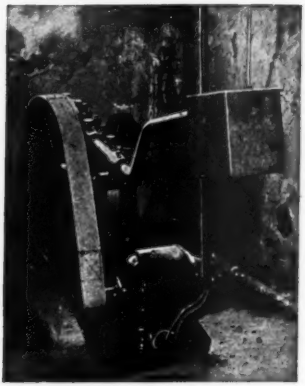
The supply must be satisfactory, to insure complete water service. A well or cistern that is adequate when the pumping is done by hand may prove inadequate when pumped by electrical power. Many pumping units have been condemned when the trouble was with the supply. The mistake of installing a shallow well pumping unit when a deep well outfit is needed can be avoided by finding out all about the supply beforehand.

Type of Pump Important

This mistake was rather recently made by a dealer when he installed a shallow well pumping unit on one of the cooperating farms on the Illinois test line in Champaign County. This dealer assured the farmer the shallow well outfit would be satisfactory. The farmer told him to go ahead and make the installation. First he installed it in the basement, and it didn't work. He then installed it over the well without results. As a last resort he installed it in a pit at the top of the well, but the pump would work for a few minutes only. By this time the customer was so dissatisfied he would not consider buying a deep well pump from this dealer, which should have been installed in the first place.

Another example of a water system being condemned when the trouble was the well, was a shallow well outfit that was delivering only a fraction of its rated capacity from a shallow well. The pump was completely overhauled,

*Professor of Farm Mechanics University of Illinois.



Deep well pump located in basement of home.

but it did not pump any better. A new pumping unit was then secured with no better results. It was evident that something was wrong with the well, which was of the driven type. A well man was secured and the well pipe was pulled. It was found that the sand point was so badly corroded that practically no water could be drawn through it. A new sand point was purchased and put on instead of the old one and it was driven back into the well. The pump was connected and it worked at full capacity.

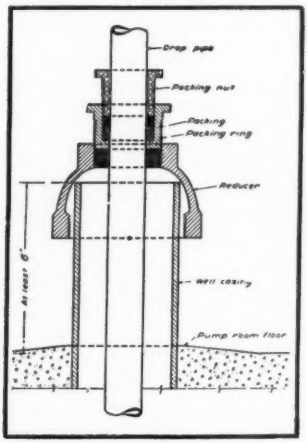
These two examples illustrate that a knowledge of the water source is as essential for good results as a knowledge of the pumping unit.

Purity is the first requirement of water for drinking purposes. Water is easily contaminated due to the fact that it is an excellent solvent and takes up impurities from the surface of the ground or roof, over which it passes before it reaches the well or cistern. Surface supplies, including shallow wells, cisterns and surface springs are much more liable to contamination than drilled wells.

The most important factors affecting purity in addition to the kind of supply are the location, the depth, surface drainage, and the kind of protection. In many states the State Health Department is in position to supply suggestions on the requirements of construction for a safe water supply. An electric pumping system simplifies the problem of protection, because the operation of a hand pump at the well is eliminated.

If the top of a well is not 100 per cent. tight the supply is liable to contamination. The same is true if the curb it not water tight, or the drainage is poor. In every state where farm water supplies have been investigated, the results have been practically the same. Many shallow wells and cisterns and nearly all surface supplies are contaminated. Deep drilled wells, that is, wells that pass through an impervious layer of material, are nearly always free from contamination.

In a survey made by the writer in Iowa, in 1913, sixty-three farm water supplies were investigated, thirteen of them were shallow open wells and fifty were drilled wells more than 100 feet deep. The results of the analysis showed that all of the shallow wells were polluted and only one of the drilled wells; the latter was a clear case of carelessness on the part of the owner. Impurities were allowed to



Good construction is essential to a safe water supply

gain entrance into the water supply through the vent hole in the pump standard.

In a similar study made in Missouri, fifty supplies were analyzed, forty-eight of these were from cisterns and two from shallow wells. The two shallow wells and forty of the cisterns showed contamination. In each case a standard sanitary chemical and bacterial analysis was made to determine the safety of the water for drinking purposes.

There is sufficient evidence to indicate that practically all the impurities in shallow wells and cisterns enter through the top. Mr. G. C. Habermeyer when connected with the state water survey of Illinois estimated that more than 90 per cent of the contamination of shallow wells entered the well within a circle with a radius of four feet.

By reasonable care in location and proper protection, shallow farm water supplies can be made safe. Under most conditions protection is more important than location. The supply should be protected against surface drainage, and seepage. This is best done by making the well curb water-tight from a point 10 or 12 feet below the surface to a point slightly above the surface. A layer of clay is often tamped around the curb. The top is so made that there is no chance of water going back into the supply once it is pumped out. Concrete is the best material for making a top. A ventilator should never be installed in either an open well or a cistern. A ventilator is of no value if the supply is clean, and may be a means of impurities getting into the supply.

Quantity of Water Important

The quantity of water available is often given greater emphasis than the purity of the supply. To provide an abundance of pure water under pressure should be the goal. The amount of water used is dependent on the ease with which it can be obtained. In making an estimate of the requirements as to quantity of water needed for a household it is necessary to know the completeness of the plumbing system. The following table gives a basis for an estimate of the quantity of water needed under different conditions.

It is evident that a well or cistern that furnished an ample sup-

A poorly protected cistern that is used for drinking water.

AN ESTIMATE OF AMOUNT OF WATER USED PER PERSON PER DAY

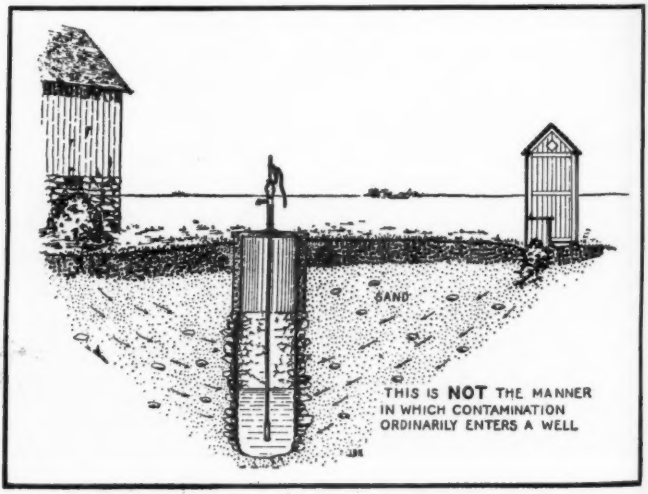
When carried by hand	6-8 gallons
One pump at kitchen sink	8 "
One faucet at kitchen sink	15 "
Running hot and cold water in kitchen	25 "
Complete plumbing	30-40 "

ply of water when pumped by hand as needed would not necessarily be adequate when modern equipment is installed. A cistern should be sufficiently large to store water during rainy periods to meet the demands for soft water during dry periods. The rapidity of flow of water into a well might determine the amount of storage needed. With a slight flow of water into the well a small capacity pump with rather large storage is desirable. Such a combination would take care of demands for large quantities of water during a short period of time. With a large quantity of water flowing into a well the demands for water can be taken care of satisfactorily by means of a system provided with a large capacity pump and small storage tank. Since this is true it is evident that the quantity of water to be stored will depend on the following factors: the need; the greatest demand in a short period of time; the kind of power and size of pump available; and the capacity or rate of flow into the well. Where the supply must take care of livestock it should be kept in mind that the following amounts are required per day: for horses 6-12 gallons, cows 6-12 gallons, hogs 1½-2 gallons and sheep 1-2 gallons.

Plan a Complete Plumbing System

The convenience of a water supply is dependent on the completeness of the plumbing system. It is always desirable to make plans for a complete system even though the entire installation cannot be made at once. A few feet of pipe and a conveniently located faucet may result in a saving of many steps and the carrying of much water eliminated. Harry Reifsteck, an Illinois farmer, estimated that two automatic poultry waterers located in the poultry yard saved one-half

(*Continued on page* 24)



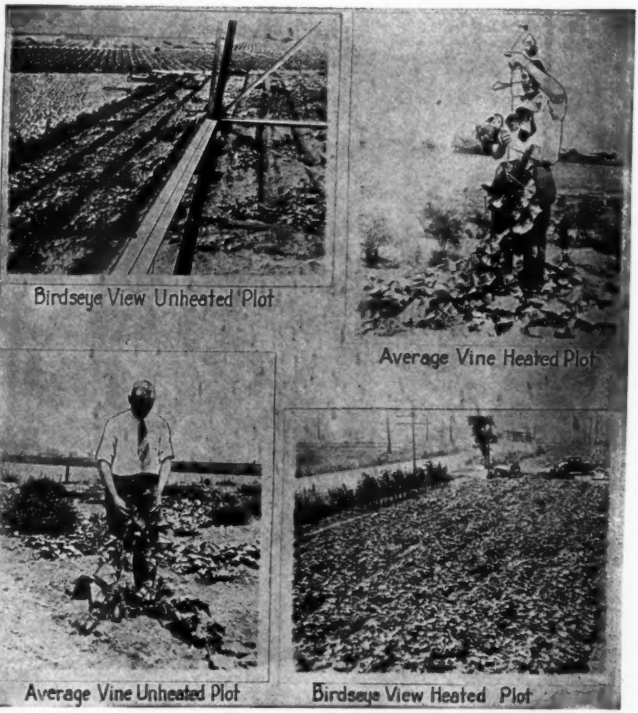
Electricity Trebles the Yield in This

TRUCK GARDEN

By WALTER V. WOEHLKE

K. MATSUDA knows his onions and his cucumbers. He knows that the early bird gets the worm, and the early vegetable gets high price. That is true even of Los Angeles where, the popular impression notwithstanding, winter nights and spring mornings have a zip and a tang that cause the tender sprouts of young vegetables to hesitate before venturing out into the cruel world.

Matsuda wanted to grow early vegetables without the expense of building greenhouses. He won-



Birdseye View Unheated Plot

Average Vine Heated Plot

Average Vine Unheated Plot

Birdseye View Heated Plot

Upper: The cucumber stand on the test plot not heated by electricity.
Lower: K. Matsuda harvesting cucumbers from rows heated by buried electric wires. Note the even, heavy stand of plants.

dered if the electric current would supply effective outdoor heat when and where it was needed at a reasonable cost. He asked the electric service company for assistance and advice. So the company sent L. S. Peterman and M. R. Armstrong, power and heating specialists respectively, to cooperate with this progressive market gardener in a test of electric ground heating.

A Demonstration

About a mile from the Pacific Ocean they selected a plot 40 x 110 feet, wired it for heating the soil, planted cucumbers and turned on the current. To have a check on the results, they also planted cucumbers on a slightly larger plot close to the test garden. They discovered that it worked. The yield of the rows supplied with underground heat by electricity was three times the yield of the unheated rows. Unfortunately the experiment was started a little late, with the result that the cucumbers did not share in the highest prices prevailing in the earliest part of the season. Nevertheless, the results were promising enough to encourage a similar soil-heating system for the outdoor production of winter flowers.

Many varieties of wire were tested, but the best results and the greatest efficiency were obtained with No. 13 double-braid weather-proof wire. This wire, directly connected on a 110-volt ungrounded circuit, was buried in the ground eight inches deep in rows four feet apart, and directly over the wire cucumbers were planted four feet apart in the rows. Electric energy at the rate of five watts per foot of wire was sufficient to maintain satisfactory temperatures.

It was desired to maintain a temperature of 75 degrees in the root zone of the vines, about 3½ inches below the surface. To bring about automatic maintenance of this temperature, a controlling thermostat was installed in the center of the plot. Its sensitive bulb was about an inch above the heating wire. This thermostat operated a standard magnetic switch in the heating wire circuit.

For the test an elaborate system of thermometers recorded the soil temperatures in both the heated and the unheated plots. These thermometers demonstrated that the heating wire with a temperature of 96 degrees was able to maintain a temperature of 75 degrees in the root zone 3½ inches below the surface, while the unheated plot showed a temperature of 66 degrees at the same depth. The thermometers also indicated that the heated wire was able to raise the soil temperature to 75 degrees for twelve inches on either side, thus covering the whole of the active root zone.

Another interesting discovery was that the air temperature two inches above the ground was five degrees warmer over the heated than over the unheated plot. Even on windy nights this blanket of warmer air was maintained, suggesting interesting possibilities. Often a difference of five degrees on frosty nights will be sufficient to give complete protection to young plants.

The test has demonstrated the technical feasibility of increasing the yield of early vegetables by electric soil heating. The cost, however, must confine the use of this method to special crops of high value grown in locations with relatively high winter temperature and low-cost current. The current consumption of the cucumber plot amounted to 2,400 kilowatt hours during a period of six weeks. As the experiment has created wide interest. Numerous similar tests will probably be made this spring in various parts of the country.

To Produce Quality Milk

Approximately $40,000,000 are lost each year through producing milk and cream of poor quality, according to the Bureau of Dairy Industry of the United States Department of Agriculture. In order to reduce these losses a number of commercial dairy organizations have added quality-control divisions to assist the farmer members in producing milk of better quality.

Clipping Expenses in SHEARING SHEEP

By T. E. HIENTON *

GONE are the days of the flail on the American farm. Just as the threshing machine and the combine have replaced hand power for harvesting grain, so is the power-driven sheep shearing machine replacing the hand-operated sheep shears for harvesting our annual wool crop of 300,000,000 pounds. We are learning to direct and control power instead of producing it with our muscles, and this change is resulting in the use of an increasing number of mechanically-driven shearing machines.

Australian Methods

This situation also exists in faraway Australia, one of the four great wool producing regions of the world. In U. S. D. A. Technical Bulletin 126, published in June, 1929, Mr. J. F. Walker gives an interesting report of the shearing methods and equipment used in Australia. "It is a common saying," writes Mr. Walker, "that someone can be found shearing sheep any day in the year in Australia and this seems to be true. Practically all of the sheep except the stud flocks are machine shorn. Additional charge is made for stud flock or hand shearing."

Not only in Australia are large shearing plants in operation, but also in the more highly developed wool growing sections of the United States located in Montana, Idaho, Utah, Wyoming, California, and Oregon. For, according to U. S. Dept. of Agriculture Bulletin 206, "In the range states sheep are shorn either in sheds located on the premises of the sheep owner or at plants owned by individuals who employ shearers, fleece tiers, and sackers, and who shear sheep from various owners at an agreed charge which includes all labor and material necessary to deliver the wool in sacks to its owner." In many of these sections the flocks of sheep are slowly driven distances of 50 or more miles to the shearing plants each year where they are shorn and then returned to pastures.

Hand Shearing

Discussing hand and machine shearing, Bulletin 206 says: "The practice of hand shearing is still quite common in parts of the West. Ridges of wool are left over the sheep's body, and the short wool of the head and belly is largely left on the sheep. Much of the wool is shorter than it would be if machine shorn, and a considerable portion of it is double cut. The large amount of short and cut fibers results in a greater percentage of noil in the combing wools and reduces their value accordingly. Many wools grade as clothing instead of combing solely because of being hand shorn."

Machine Shearing

"In some sections where rapid changes of weather are experienced, the sheepmen object to machine shearing on the ground that the sheep will blister during hot weather if shorn too closely. Losses due to a cold wave following close shearing have also been reported. However, machine shearing does not necessarily mean close shearing, as thicker combs can be used and the fiber cut at a greater distance from the skin; but it does insure more uniformity. A great deal of the prejudice against machine shearing has been aroused by improper handling of the machines." These recommendations indicate the desirability of using machine shearing in preference to hand shearing, as well as remedies to

*Ass't. Professor of Agricultural Engineering, Purdue University, Lafayette, Ind.

overcome any objections to machine shearing.

On farms where the shearing is done by the owner himself, the use of motor-driven sheep-shearing machines is decidedly increasing with the increasing availability of electric power. For the 1928 shearing season, Mr. C. R. Raish of South Bend, Indiana, purchased an electrically-driven machine operated by a ¼-h.p. motor. He had previously shorn his sheep by hand. He states that machine-shearing with hand-power is faster than hand shearing and that motor-driven shearing is faster than hand-power shearing. He very much favors the use of a shearing machine instead of the hand shears, because of the saving of time and also because a closer and smoother job is done, resulting in more wool and less cutting of the sheep. He says the additional wool and the time saved would pay for his equipment. He finds the cost of shearing with electric power so reasonable that he cannot afford to use hand power.

The handling of the sheep prior to, as well as at the time of shearing frequently affects the price received for the wool. It is possible by proper precautions to improve the quality of the fleece and thereby increase its market value. To eliminate burrs, mowing the flock pasture with a mowing machine may be helpful. The use of proper feed racks and tight hay mow floors over feeding pens will assist in keeping hay or straw and chaff out of the fleeces of the flock. Oil, paint, and tar brands do not dissolve and disappear from the wool during the scouring process used to clean it at the mill and should not be used for branding purposes. If paint has been used, it is good practice to clip and discard the painted wool before shearing. The formation of large dung locks may be prevented by keeping the sheep clipped behind, especially if they are scouring. Dirt and dust can be partially kept out of the fleece by shearing the sheep on board floors or platforms and by holding the sheep prior to shearing on slatted floors where the size of the flock may warrant the use of such holding pens.

The handling and packing of the wool are also important items in the determination of the price received for it. Failure to tie the fleeces, the use of the wrong kind of twine for tying, excessive mois-

(*Continued on page* 40)

Electric motor-driven sheep shearing machines being used in sheep shearing contest, Great Falls, Mont., summer 1929.

Mr. and Mrs. Sullivan and the family.

Dairy STERILIZATION

With Electric Heat on New York Farms

By F. La T. BUDGETT

WHEN New York State's new Sanitary Code went into effect in July, 1926, it stipulated, among many other things, that dairy utensils "shall be sterilized daily with live steam or hot water at a temperature of not less than 180° F., or by other method approved by the State Commissioner of Health." Here's how one New York State farmer, Mr. T. A. Sullivan, of Ballston Spa, is meeting the problem.

Dropping in one Saturday afternoon, I found him very glad to show me his equipment. The first thing that caught my eye was an electric sterilizer, all the way from California. For the benefit of those not familiar with the electric sterilizer, it may be explained that it consists generally of the following parts: a cabinet, in which the milk pails, cans, strainers and other utensils can be placed; a trough for water, located at the bottom of the cabinet; an electric heating element; a thermometer; and sometimes a thermostat.

The apparatus can be used very conveniently to heat water for washing the utensils. In this case about 5 or 10 gallons of water are put in the trough and heated to 120° or 130° F. The water can be drawn off through a tap as needed. For sterilizing, a small amount of water (from 1 to 2 gallons) is put in: when the utensils are in place and the cabinet closed, the current is turned on, boiling the water and filling the cabinet with steam. Those sterilizers which have a thermostat will do their work quite automatically. It is only necessary to put in the trough the amount of water which will just have boiled away when the utensils have had their proper time of exposure to the steam. The switch is then snapped on. When all the water has boiled away the temperature of the heating element will rise so high that the thermostat will act and cut off the current.

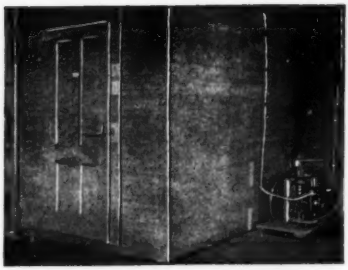
The electric sterilizer has been in successful use in California and Washington for some time, but is a comparative newcomer in the East as yet. With it, one can be sure of doing a good job both of

washing and sterilizing, with the least possible expenditure of time and trouble.

I asked Mr. Sullivan how it came about that he put in the first one in his neighborhood. He said that early in the summer of 1928 the local health officer came to look over his dairy. After congratulating him on the way his place was fixed up, the doctor went on to tell him about the new State Sanitary Code which was soon to go into effect. "You will have to sterilize all your utensils then," he told Mr. Sullivan, "so you might as well make your plans ahead of time." Mr. Sullivan didn't know just what plans he could make, as he was not well placed to install a steam boiler. But when his problem came to the attention of the Rural Service Division of New York Power & Light Corporation, his local power company, they suggested his using an electric sterilizer, and he decided to try one out.

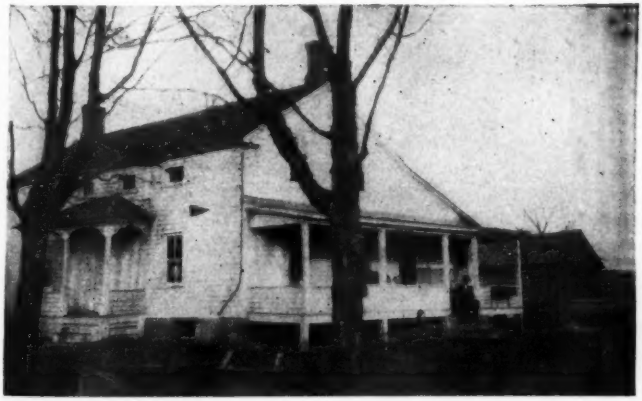
Equipment Used

His equipment has a 5 kw. heating element, and cabinet capacity for 6 10-gallon milk cans or 6-bottle crates. It is regularly used both to heat washing water and to sterilize the utensils, as described above. It was put into service in the middle of August, 1928, and during the first three months the electricity consumed averaged 332 kw.-hrs. per month. Taking some later figures over a period of a year, from March, 1929, to March, 1930, we find the monthly average to be 340 kw.-hrs. These latter figures are seen to check the first ones very closely.



Cold storage box and electric refrigerating machine.

I went on to ask Mr. Sullivan a few more questions. I found that he had the first T. B. tested accredited herd in his vicinity, consisting of some 25 Holsteins. "I have been lucky," he said. "In the last four tests I haven't lost one." His milk, which is retailed locally,



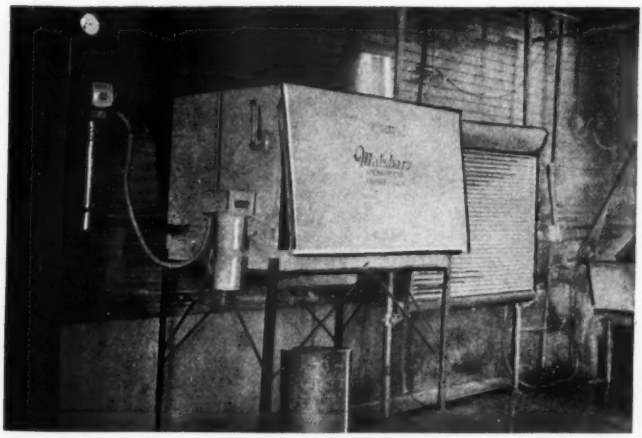
Mr. Sullivan and his home at Ballston Spa, N. Y.

is Raw Grade A. Seeing that he had a large cold storage box operated by an electric refrigerating machine, I inquired how he liked it, and how much of a job it had been to cool the box with ice. "I don't see why any one would bother with ice these days, when an automatic machine will do the job better and cheaper," he replied. "It used to cost me about $350 a year for ice, and I used to harvest 1,200 to 1,500 cakes. The ice bunker in this box had a capacity of 3,000 lbs. In the hottest weather I had to get it filled every four days. This was about an hour's job for three men, two outside and one in the box. The last two months I used ice, August and September, 1926, it cost me about $1.75 a day; while since I have had my electric refrigerator my highest power bill was only about $18 for a month." His bills average $6.50 in the winter and $14.50 in the summer for electricity to operate a 1 h.p. water system, a ¼ h.p. brine pump for the surface cooler and a ¼ h.p. bottle brush, as well as the milk cooler with its ½ h.p. motor, a milking machine, and a 2 h.p. motor which he uses for cutting corn for the cattle. In about 15 minutes, twice a day, he can cut the necessary 20 or 30 bundles.

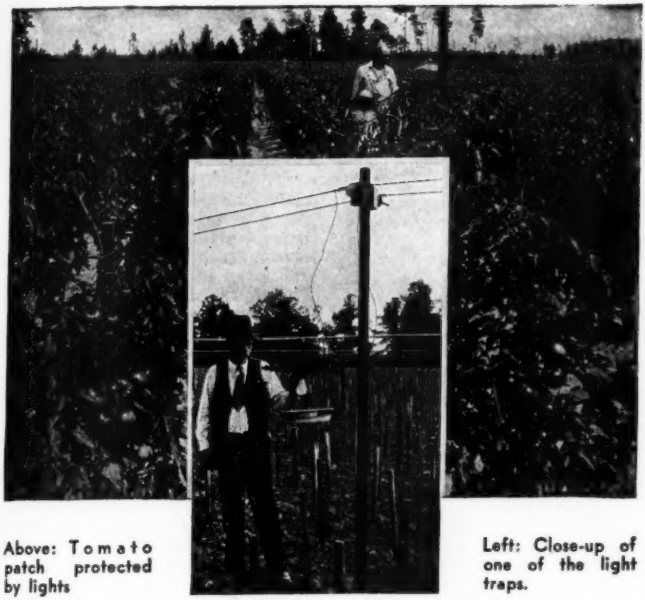
With all this array of dairy equipment, one might expect Mrs. Sullivan and the farm home to be rather neglected electrically. However, this is not the case, for she has her electric washing machine and iron to make short work of washday, to say nothing of electric lights.

Pays to Sell Cream

Dairymen who separate at home and sell cream have certain advantages as compared to those who are trying to crowd in on the whole milk market according to Prof. C. W. Holdaway, professor of dairy husbandry, Virginia Polytechnic Institute. The additional costs for producing market milk amount to from 10 to 16 cents a gallon and cream sellers also have an advantage of the skim milk at home equal to 15 cents for every pound of fat that is sold. Records kept on 23 dairy farms by the University of Minnesota having an average of 11 cows each showed that the skim milk not only helped raise the crop of calves each year but provided 33 tons of skim milk for hogs and chickens.



The electric sterilizer. At the left will be noticed the switch and cable for the heating element—also the thermometer.



Above: Tomato patch protected by lights

Left: Close-up of one of the light traps.

Electric Lights Aid the Tomato Grower

By E. C. EASTER

FOR several years an increasing number of farmers in Alabama have successfully used electric lights to control the tomato fruit worm.

Mr. S. P. Storrs of Wetumpka was the first farmer of the state to install a lighting system in his tomato patch, as an experiment to determine the effect of the lights on the damage from the fruit worm. He has used the lights for three years and states that by keeping the lights turned on each night from about April 1st until the tomatoes are harvested, he reduced the infestation to less than one per cent. His neighbors without the lights have suffered a loss of about 30% of the tomato crop each year. The first year that Mr. Storrs used the lights he produced 40,000 pounds of tomatoes on two acres of land. The lights, by saving 30% or 12,000 pounds of this crop, meant a saving of $1,200.00. The initial cost of installing the lighting system, which consisted of 8 lights, was about $100.00 and the cost of electricity per season has been about $20.00.

Mr. C. G. Quiggle, on his tomato patch near Mobile, installed fifteen 100 watt lamps over pans of water and oil five feet above the ground on three acres of tomatoes.

Mr. Quiggle estimated that the lighting system saved for him 6,000 pounds of tomatoes the first year, which he sold for $600.00 at 10 cents per pound. The cost of electricity to operate the lights from dusk to daylight, from April 8th to June 15th, was $31.50, resulting in a net saving of $568.50 (less cost of gathering and marketing the 6,000 pounds) in the one year.

Other farmers of the state are using the electric lighting system with equally satisfactory results. The installation of the lights is simple and inexpensive and even farmers that produce tomatoes for only the family are obtaining an advantage from the use of lights.

Farm Water Supply

(*Continued from page* 14)

hour labor a day last summer.

The modern bathroom with its sanitary fixtures, and providing hot and cold water under pressure, should be the objective toward which every farmer who gets water under pressure should strive.

It is the most important home improvement that can be made to safeguard the health and make the job of taking care of the children easier. The men folks, after working in the field all day, appreciate a good bath most of all.

A Simple But Convenient Plumbing System

A very simple, inexpensive electric power operated water system, which would appeal to many farmers who want a convenient method of getting water into the house, and at the same time pump it to the livestock tank or to other points with the same pump, has been in use for a number of years in Champaign County, Illinois. The same type of installation has been used in other states and is described in bulletins published at Nebraska, Michigan and Wisconsin Agricultural Colleges. Only a motor and pump jack is needed.

The piping is connected to the pump in a manner so that the water may be pumped to several points. By means of two three-point switches, one at the stock tank, and the other at the kitchen sink the pump can be started by turning on either switch. In case it is desired to start the pump from other points where the water is wanted, one or more four-point switches can be installed between the three-point switches. Faucets or valves should be installed at all points where water is desired except at the highest point where an open pipe or small reservoir with overflow should be installed. This serves as a safety device so the excess water from the pump has a place to flow when the pump is started at any point and the faucet is opened only part way. This system may be easily added to and made complete.

Modern Rooms For "Paying Guests"

The chance for a restful night, at an attractive country home undisturbed by city traffic makes a strong appeal to the traveler. This letting of rooms to tourists has proved a profitable summer occupation to thousands of farm housewives in homes strategically located along state highways. Where running water for the bathroom and electric lights are available the attraction is much greater for the prospective guests. Road signs which are illuminated after dark invite at a time when the traveler is in the mood to stop for the night. Electric lights will also help the roadside vegetable and fruit stand to do business in the cool of the evening when it is most convenient for town customers to buy.

Those who have modern conveniences are not only able to take advantage of their location to secure additional revenue but will also find the extra work less burdensome. With water under pressure and power available, the increased amount of laundry incident to the enterprise is more easily handled. It is much easier to keep the rooms clean when a vacuum cleaner can be used. And the electric range and refrigerator insure appetizing meals in hot weather with the least possible effort.

ELECTRICAL HOUSEKEEPING

Conducted by
GAIL MEREDITH

Cooking With Current

CLEVER cooks ask few odds of their fuels. Through all the years from the time when we hung over an open fire of sticks and twigs up to the days when we stoked coal in an enameled range, we have accepted the fire building and fire tending as part of the job of cooking. But not every one who stokes a cook stove is a good cook, and it is doubtless for the sake of those who are cooks by marriage rather than inspiration that men go on inventing new fuels. For if you will think it over, you will see that every new invention has brought the fire just a little more definitely under the control of the cook.

A New Fuel

Electricity is one of the newest fuels for the kitchen stove. We do not build or even light a fire in an electric range because we do not burn electricity for heat; we turn it on and it makes the heat by flowing through the wires of the cooking units on the range. It does not take anything out of the air; it does not give off any smell; it does not leave any ashes.

It is a controlled heat. It heats only the pots or pans on the burner we are using, or the food in the thickly insulated oven. Because an electric range does not heat the kitchen, many manufacturers have added to the range they make a fire box for coal or wood to warm the kitchen where that is necessary.

Electricity is a safe fuel. It gives small chance for us to be careless in its use because we do not light it with matches, nor send it roaring up chimneys, nor lose it as a gas.

We find it cleaner than any fuel we have ever used before. No one brings it in, dropping chips and dirt on the way to the wood box. There is nothing left when we turn the fire off. It is just a measured amount of heat produced instantly when we want to boil a mess of peas, or bake a cake and cut off on the instant the job is done. The fact that it can be applied to just the cooking at hand, and that it comes and goes when that cooking demands, helps make it at prevailing cooking rates, an economical fuel.

Moreover it can be controlled automatically. Oven regulators that operate by changing temperatures will keep the current turned on in the oven until the temperature we want is reached. Then they will turn it off. When the temperature falls, the regulator turns the current on again. So it goes, off and on, through all the cooking period.

More than that, we can set a clock in the circuit, and it will

An electric range is clean and convenient.

turn the electricity on for us; so the food we have shut up in the oven will begin cooking while we are miles away in town. It will turn it off again, too, when the cooking is done.

Efficient Use of Fuel

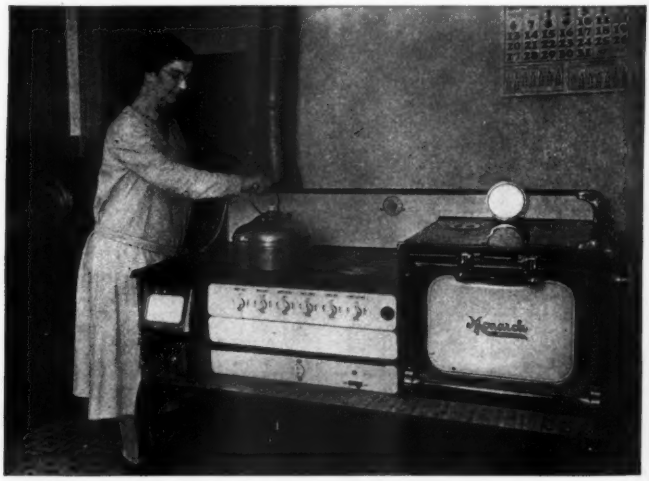
Learning to cook with electricity merely means learning to use the fuel efficiently. We learn to set a regulator and look at the clock when we bake biscuits instead of testing the oven with the back of our hands.

We learn to use the heat in our well insulated ovens for as many things as we can. That means planning to fill up the oven in the first place, and baking fruit or a small cake with the stored heat after a meal comes out.

We find that we can cook more quickly and thus more economically on the surface burners if we do not put our vegetables on in a kettle half full of water. Happily for the budget, scientists who are studying the elusive mineral and the volatile vitamine are teaching us to cook our vegetables in as little water as possible if we want to save these valuable food elements. That bolsters up our determination to learn to cook in what folks call, not with strict accuracy, the "waterless way,"—which really means cooking in the steam from a very little water in a kettle with a very tight cover.

If we are wisely thrifty, we learn soon enough that after a pot is boiling, we can keep it on the boil with the switch turned to *Low*, and that it will even boil for several minutes after the current is turned off. There is a very definite saving in adjusting the switches to the job in hand because when the switch is turned to *Medium* it takes just half as much current as it did on *High* and when it is turned to *Low*, it takes just one-fourth as much.

Good business demands fitting these wattages to the cooking job. Each burner and each of the three switch settings for each burner deliver a different amount of heat. With a four burner range in our kitchens, we housewives have twelve different fires to choose from. If we learn to fit the heat to the job in hand,—a good high



This range has a fire box for coal and wood that heats Mrs. Schwanke's kitchen when the weather is cold. Mrs. Schwanke lives in Spring Green, Wisconsin.

wattage if you're broiling steak—and a small unit turned to *Low* to cook a soup bone, we will be making the most of our fuel.

* * *

Spring Styles In Words

"NOBODY likes to be different," said Ruth Hall, a friend of mine, the other day. "When I was in high school, I used to dread going to stay with my friends in town because I didn't know how to turn on their electric lights. We have electricity ourselves now, but do you know, I find that I'm just as ill at ease in the presence of some of the new words it brings into the house as I ever used to be before a light button."

"It is a simple matter to bring your vocabulary up to date," I reminded her. "The styles in words are a lot easier and a lot cheaper to keep up with than the styles in hats. If you know the meaning of a few simple electrical terms, you can get along very well with this new service."

Then we sat right down at her kitchen table and wrote out, as well as we could, a few definitions of the terms in common use when folks talked about electricity or electric equipment to her.

First there is voltage. This is the force or pressure that drives the electric current along the wires from the place where it is generated.

A volt is the unit of measure of that pressure.

The pressure on the wires that come into our houses is usually 115 or 230 volts.

Amperage is the quantity of the current that flows along the wires. An ampere is the unit of measure of that quantity. If we compare volts to the pounds of pressure behind the water in a pipe, we can compare amperes to the quantity of water that the pipe delivers.

Circuit is the wire path which electricity travels. It must be a continuous path to the equipment and back. If there is any break in it either way the current will not flow. The circuits in a house start from and return to the fuse box. The wiring of any house is usually divided into several circuits.

A fuse is a short length of soft wire made up in a plug that will screw into a receptacle and become part of one of the circuits. This wire melts easily, and is used to stop the flow of electricity if it should become too great for the wires.

Explanation of Watt

When any appliance is turned on, it provides a path for a certain amount of current, and that amount is delivered because of the constant pressure or voltage on the wires. So the energy that each electrical device consumes is determined by both the quantity of current on the wires and the pressure behind that current. We call that unit, the product of the amperes and the volts, a watt. This is the measure of the amount of electricity a piece of apparatus uses.

A watt at work for one hour is the unit of electricity as we buy it, like the dozen we use for eggs or fried cakes. Only unlike a dozen eggs or a dozen fried cakes, the watt-hours of electricity is so very small, that we buy a thousand of them at a time, and call the unit a 1000-watt hour, or kilowatt hour—kilo being the Greek word for thousand.

When we had these all safely down on paper, we talked of other things, and I went on my way, forgetting the whole affair.

It was a month later that I ran across Ruth again. She was just leaving a Home Bureau meeting, I think she said, and she called to me eagerly as I was getting into my car.

"Oh, wait a minute, Gail. I want to tell you something. We have been studying home modernization this last winter, and two weeks ago I took those definitions you gave me down to our club meeting and we learned them, just like rules."

"That's nice," I said. "I'm awfully glad you found them helpful."

"We certainly did," Ruth replied,

patting me on the arm. "Why, you'd be surprised what a difference it makes. Now we farm women can talk about watts and kilowatts like nobody's business."

* * *

A Made Over Room

Part I

MY young neighbor across the road came over to my house one morning with a doleful expression on her usually sunny face.

"How can I furnish a room for five dollars?" she asked.

"What do you want to furnish another room for?" I asked Yankee fashion.

She and her husband had moved into the house across the road the spring before, and had seemed comfortably settled in as much of the big rambling old place as they really needed.

"Dick's sister has just written that she can come out and spend the summer with us. Of course, we want her to come, but we haven't a room for her, and our budget just won't stretch to furniture this spring. I have a five-dollar birthday check, but that wouldn't furnish a chicken-coop."

"I suppose you want to fix up that bedroom across from yours, don't you?"

"Yes, that would be the prettiest, but honestly I haven't even a bed for it. We have some springs and an old mattress, but I can't very well put them on the floor."

"Let's try our attic," I suggested. "There is a lot of old stuff up there that ought to be carted off somewhere this very minute. Maybe you can use some of it. I'll probably throw it out anyhow when I clean."

I added this last very convincingly, I thought, as I panted up the last flight to the dusky garret.

The first thing we found was an old chest of drawers, low but roomy.

"You might be able to use this," I said as we pulled and hauled it into sight. "It's been up here for years. It really isn't worth much, but it has what our home demonstration agent calls good lines. Back there under the eaves is a little birch rocker that was in the attic when we bought this house. All it needs is a new seat to make it sound enough. You can use that in a bedroom all right. Then there used to be a lot of straight backed chairs around somewhere."

We dug around till we brought out four or five old kitchen chairs. One of them had all four of its legs intact, and a substantial looking back. Beth fairly glowed over it. And then in the farthest corner we came upon an old bedstead that Ben had lugged home from an auction one time, and I had never used.

"You are welcome to these old things, my dear. They may give you a start. Perhaps you can dab a little paint on them and brighten them up."

"I ought not to take your things," Beth hesitated.

"Now don't be silly. They aren't worth anything to me up here. Take them and use them."

"Your attic is a gold mine," she laughed as we clattered downstairs with a chair a piece. You'll be having me expect it to produce everything I need if you keep on spoiling me everytime I drop in and wail."

Dick came over at noon for the chest of drawers and the bed.

"You're mighty good to us, Mrs. Meredith," he began awkwardly,

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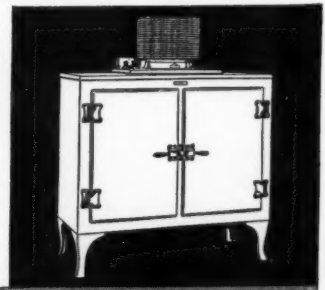

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also quickly pay for themselves, and save you time and labor. Full 3-Year Guarantee.

GENERAL ELECTRIC

REFRIGERATORS MILK COOLERS

his nice boyish face flushed with embarrassment.

"Go long with you. I am palming off a lot of good-for-nothing truck on you. It's just a nuisance up in my attic."

The next week or two I was too busy with my own spring cleaning to think much of what Beth was doing. I knew she had been to town a couple of times, but she was very mysterious about it. Whenever I saw her, she was very much in a hurry and she said she had been painting, but she seemed unwilling to talk much about it. Her mouth turned up again at the corners though, so I judged that the room was working out all right.

Then one day she came dashing over about one o'clock.

"Come on over; the room is done. Come and see it, won't you please?"

There was no gainsaying her eagerness, so I left my dishes and followed her. She would not say a word about the room, only hurried me upstairs in undignified haste, opened the door, and thrust me in. I gasped in genuine amazement and admiration.

(*To be concluded*)

• OUR NEIGHBORS •

A Farm Factory

by

Mrs. W. S. Hobbs

TAKING care of a large modern farm home, cooking for hired men, raising several hundred Buff Orpington chick every year, and mothering four small daughters sounds like a full time job for any woman. But Mrs. W. C. Ploeger of Hiawatha, Kansas, has developed a business in addition these last three years, a business which is growing so that it looks as though it might become a vocation instead of a mere avocation.

When Mrs. Ploeger heard of radio request for an "airing" of bread-making grievances, she exclaimed to her family, "Why, I have none, I have been baking bread since I was eight years old, and never have a failure, with my own hop yeast recipe."

She then conceived the idea of commercializing her yeast invention, which she had always shared with her friends. At first she

Mrs. Ploeger has a quartet of four lovely daughters.

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Universal motor for any 110-120 volt, direct or alternating current. Also supplied for 32 volt, direct or 220 volt alternating when specified.

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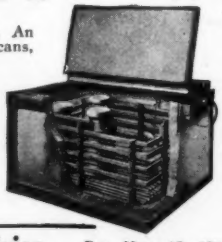
ESCO DRY-AIR ELECTRIC STERILIZER. An electrically heated, insulated cabinet for cans, pails and utensils.

ESCO ELECTRIC WATER HEATER. Supplies required quantity of hot water at each milking time.

Write for details as to sizes, styles, prices, etc.



ESCO CABINET COMPANY
West Chester, Penna.

Standard of the Better Dairies *Pat. Nov. 25, 1930*

Mrs. Ploeger markets her yeast in neat businesslike cartons.

placed it in a few local stores for sale; now she has a regular yeast factory in her home. She distributes the yeast to approximately one hundred stores over a rather wide section; some of the orders come from as far west as Washington; others from as far east as Pennsylvania.

The yeast is made in a 50-pound mixer several times a week.

The factory room is fitted with large drying racks, and stores thousands of packing boxes and mailing cartons. Her orders for cartons amount to as much as ten thousand at a time. The yeast has been given the name of The Ploeger-Ruth Hop Yeast, and a patent has been applied for.

Stages Demonstrations

Frequently Mrs. Ploeger puts on demonstrations for milling companies, in which her yeast is combined with the company's flour. Over seventy baked products have been made from a sack of flour. At Shenandoah, Iowa, her 100-egg angel food cake was viewed by 25,000 people.

Mrs. Ploeger has the capacity for doing no end of things; if she wants an out-building moved, she does not wait for a house-wrecker, or her busy husband, nor the hired man, but she does it herself. She keeps up her church and neighborhood club activities, her sewing, and home work. She is state organizer for the Sunshine Club in Kansas right now. She has a propensity for winning prizes that is uncanny. She has, in various contests, won an automobile, a gold watch, a leather suit case, an Edison console and a gas heating stove.

Mrs. Ploeger, whose maiden name was Ruth, is frequently asked whether she is related to the Ruth of baseball fame. To this question she always shakes her head and says, "I don't know. Maybe I am; maybe not."

Everyone knows some farm woman that the rest of us would be interested in. If you do, won't you write me about her for OUR NEIGHBORS *column? If she does something unusual or interesting, tell us about that. Tell us everything you can think of about her. Yes, gossip as much as you like. If you can get a picture of her, or her activities, send that too.*

GAIL MEREDITH

Tall nettles cover up, as they have done
These many springs, the rusty harrow, the plough
Long worn out, and the roller made of stone;
Only the elm butt tops the nettles now.

This corner of the farm yard I like most;
As well as any bloom upon a flower
I like the dust on the nettles never lost
Except to prove the sweetness of a shower.

Edward Thomas.

The Green Knight

PAUL WATER SYSTEM

New Low Price!

$75

THE Paul Green Knight Water System provides the wonderful convenience of an *unfailing water supply, instantly available,* for the kitchen, laundry or bath! Mighty satisfying too—to have plentiful water, with adequate hose pressure, for sprinkling the lawn, fire fighting or washing the car.

THOUGH miles removed from city water facilities, you may, by the installation of a Paul Water Supply System, *enjoy the same modern bath, laundry and kitchen convenience as your city neighbor.* Best of all, you can enjoy this Water System while you pay for it. Only a small amount down and 12 small monthly payments buys it. *Write today for more details.*

Sold on Easy Payments

FORT WAYNE ENGINEERING & MFG. COMPANY

Fort Wayne, Ind.

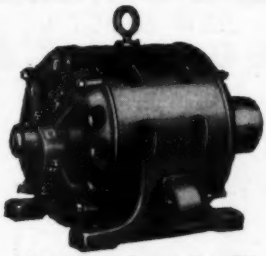
Pumps and Water Systems — *Water Softeners Heaters*

Ft. Wayne Engineering & Mfg. Co., *1722 N. Harrison,* Ft. Wayne, Ind.

Send complete information and prices on Paul Green Knight Water System . . . and Easy Payment Plan.

Name.....

Address.....



5 Horse Power Century Type RS Repulsion Start Induction Single Phase Motor

Water When You Want It

Water instantly—the year 'round—at any time—24 hours per day—with Century motor-driven water supply systems. Many hundred thousands of these motors are giving daily satisfaction in cold and hot, and humid climates. Many operate automatically by a float or pressure switch.

Century motors have a built-in ability to give continued operation. They "Keep a-Running."

Built in all standard sizes from 1/8 to 40 Horse Power

CENTURY ELECTRIC CO.
1806 Pine St. St. Louis, Mo.

Century MOTORS

STOVER
NEW ELECTRIC
PUMP JACK

Here's the new No. 1½ Stover Pump Jack. Especially designed for those who require a small, compact, powerful motor driven unit. Direct connected, gear driven motor. ¼ or 1/3 H.P. Smooth, quiet, fool-proof.

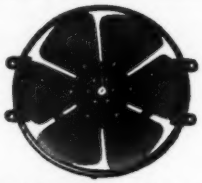
Write for Catalog

Send today for our latest catalog on Pump Jacks and other electric driven machines.

Stover Mfg. & Engine Co.

Also makers of Windmills, Feedmills, Engines, Corn Shellers, Saw Frames, Swartz Automotive and Tractor Replacement Sleeves, Tank Heaters, etc.

171 Lake St. Freeport, Illinois



VENTILATION
Means
Larger Profits

The importance of correct ventilation cannot be ignored.

Equipped with dust-proof motor, and propeller designed to give maximum delivery of air, MARATHON "OK" Fans are specially adapted for the dairy barn, chicken coop and barn ventilating system.

16"—1160 RPM or 1740 RPM — $55
18"—1160 RPM or 1740 RPM — $65
20"—1160 RPM only — — — $75

MARATHON
ELECTRIC MFG. CO.
WAUSAU, WIS.

Cullman *Electric* PUMP DRIVE

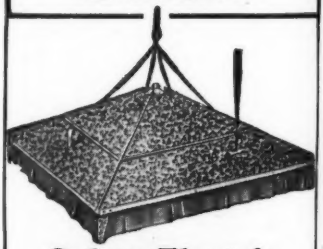
PLUS THE DEEP WELL CASING HEAD

For frost proof systems the combination of the Drive and Casing Head is supplied. Clamps without threads direct on well casing in pit. Excellent for pressure pumping and automatic control. Economical to install —economical to operate.

Send for Circular on Cullman Water System

CULLMAN WHEEL CO.
1342 Altgeld St., Chicago, Ill.

No ashes, fumes or trouble



Oakes Electric Brooder

The Oakes Electric Brooder is fully automatic. Maintains even heat always. No crowding or smothering. No lamp or stove to take up space. No fire hazard. No danger of gassing chicks. Saves work, worry, time. Five sizes: 100 to 1000 chicks. Write for catalog.

The Oakes Mfg. Co.
Dept. 77, Tipton, Ind.

WINNERS of February Contest First Prize—$25.00

"The electric radio casts a spell,
Which lover and candy can't dispel."

Mrs. James Bunting, R. 3, Medina, N. Y.

The following titles have been selected as winners of the $5 cash prizes:

"Even 'Cupid' so you see, Has to compete with 'Electricity.'" Lula Waggoner Weathers, R. 4, Galesburg, Ill.

"A voice on the air in the modern way, Makes her forget 'tis Valentine Day." Doris Du Bois, R. 1, Thayer, Mo.

"The lover finds ,to his dismay, An electric rival in his way."—Mrs. A. H. Moeser, R. 2, Larsen, Wis.

"St. Valentine may miss some hearts, When cupid radios electric darts." V. Ross Nicodemus, R. 1., Henrietta, Pa.

"The 'Radio Man' so entrances me, The 'Candy Man' I cannot see." W. Morris Blood, Oregon, Mo.

RULES for April Front Cover Title Contest

For the best title to this month's front cover illustration, a cash prize of $25.00 will be awarded.

In addition, we will pay $5.00 for each of five titles given honorable mention.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

The winners will be announced in the June issue.

Only the farmers or members of the farm family, to whom this magazine was sent, are eligible.

Only one title may be submitted.

Use the form below or write your answers on a plain sheet of paper in similar form.

Contestants must answer question (a).

Write plainly and send your suggestions to the Title Editor, ELECTRICITY ON THE FARM, 24 W. 40th St., New York, before May 1.

My title for the April Front Cover picture of ELECTRICITY ON THE FARM is.....

.....

.....

.....

.....

.....

(a) Fill in the brand name of any of the following table appliances you now own:

Electric Toaster .....

Electric Waffle Iron .....

Electric Coffee Percolator .....

Electric Egg Boiler .....

Name ..... R. F. D.....

Post Office ..... County..... State.....

Questions and Answers

Conducted by
H. J. GALLAGHER
Agricultural Engineering Dept.
Michigan State College

Note—Readers are invited to send in questions which will be answered in the order received.

Cause of Shock

Question: *I use a ¼ H.P. motor on a cream separator in my milk house. With the motor running and with my hands on any part of the separator I receive a shock. The safety switch in the circuit is grounded. What do you think is the trouble?*

Answer: In damp or wet places such as milk rooms, all metallic objects such as motor frames, etc., near or associated with power conductors should be grounded for protection against shock due to electrical charges. A ground wire from the frame of the motor to the nearest water pipe or other grounding medium would stop this annoyance.

Beside the equipment grounding there is also the grounding of the secondary wiring system to protect the low voltage system against leakage from the high voltage system. In a three wire system this is done by grounding the neutral wire at the service entrance and outside the service switch.

* * *

Double Use of Pump

Question: *Can one electric pump be used to pump the hard water and the cistern water?*

Answer: Yes, on shallow well installations where the electric pump is in the basement it can be used to pump both hard and soft water. The hard water pressure tank should be about forty gallons capacity, the soft water tank 200-300 gallons capacity so that it only requires pumping the soft water about once each week. Except when pumping soft water the pump should be in automatic operation on the hard water. Each time the pump is changed from hard to soft water a valve on the hard water suction line and the hard water discharge from the pump must be closed, and corresponding valves on the soft water line opened. The reverse is true to again pump hard water. In addition to this being an annoyance, the cost of the soft water storage tank would generally be greater than would be the cost of a small automatic pump for the soft water. The cost of operation would be about the same in either case.

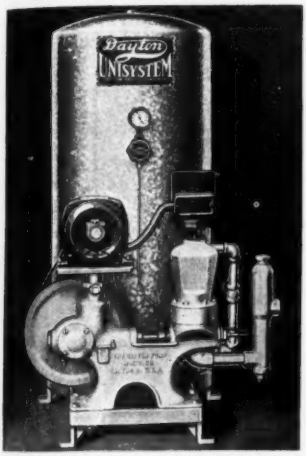
* * *

Wrong Sized Wire

Question: *I bought a ¼ H.P. motor with ten feet of extension cord and it worked fine but the extension cord was six feet too short. When I added more cord the motor ran slow and would not develop as much power as it did before. Is sixteen feet of extension cord too long?*

Answer: No. As long as wire of proper size is used extension cords can be practically any length. In all probability the extension cord you added was the common lighting fixture cord of No. 18 B and S gauge wire. A wire of this size has a carrying capacity of only three amperes, a little over half the demand of the motor. Use an extension of No. 14 wires and your motor will operate as it did before you increased the length of your cable.

RUNNING
Water — Greatest Convenience of All



WHAT comfort, convenience and added happiness for every member of the family in those homes where a fresh supply of Running Water Under Pressure is available! Think of enjoying all the advantages of City Water Service. Imagine an abundance of running water in the kitchen, the bathroom, in the barns, garage and dairy buildings—one outlet or a dozen—it's all the same to a DAYTON.

Pictured here is a DAYTON Unisystem—one of the many popular DAYTON models that may be had at a remarkably low price to serve you successfully for years to come.

An interesting folder showing the complete DAYTON line awaits your reply. Get your copy in a hurry—Mail the coupon today. The Dayton Pump & Mfg. Company, Dayton, Ohio, U. S. A.

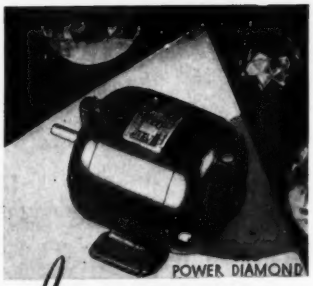
Dayton WATER Systems

THE DAYTON PUMP MFG. CO. EF4
Dayton, Ohio
Gentlemen: Please send me your folder showing the complete Dayton line.

Name .....

Address .....

MAKE THE *WATER* DO THE RUNNING



A Highly Valued FARM AID!

MASTER PORTABLE FARM MOTOR

Master Guaranteed Motors are real farm helpers — built for difficult service — and cost no more than other makes.

A rugged, portable motor (3 and 5 H.P.) which saves time and labor on the heavier jobs such as sawing wood — filling silos — grinding feed, etc. Soon pays for itself.

MASTER MOTORS 1/30 to 10 H.P.

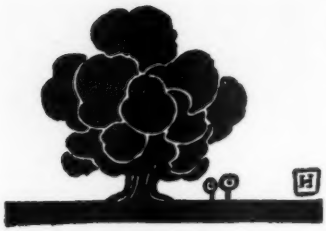
Then, you should have a Master Motor Grinder for sharpening all your tools.

Master Motors are made in sizes 1/30 to 10 H.P.—a motor for every kind of a farm job.

Write for full information.

The Master Electric Company
Dayton, Ohio

MASTER
Guaranteed
MOTORS
1/30 to 10 H. P.
More Than 100 Service Stations



Under The CHESTNUT TREE

Multiplied

"Say, mister," said a little fellow to a next door neighbor, "are you the man who gave my brother a dog last week?"

"Yes."

"Well, ma says to come and take them back."

Attorney: "Where was the defendant milking the cow?"

Witness: "It's hard to describe, Judge, but if you'll bring in a cow I'll show you the exact place."

"When I came to New York, I had only a dollar in my pocket. With that small amount I made my start."

"What did you do with the dollar?"

"Wired home for more."

Taxicab Driver: "Where do you get that 'Home James' stuff? This is a taxi—see!"

Passenger: "Pardon me, my error. Home, Jesse James!"

A cold wet May,
Barn full of hay.

So runs an old couplet; but with tractors rapidly replacing horses on many farms, of what use will a barn full of hay be?

Practical

Doctor: Your husband must have absolute quiet. Here is a sleeping draught.

Wife: When do I give it to him?

Doctor: You don't, you take it yourself.—Everybody's Weekly (London).

As we understand the doctors, you can live much longer if you will quit everything that makes you want to.

Wife (with newspaper): "Just think of it! A couple got married a few days ago after a courtship which had lasted fifty years."

Husband: "I suppose the poor old man was too feeble to hold out any longer."

Poor Kitty

A small boy who was staying at a farm rushed indoors one day and breathlessly exclaimed that a mouse had fallen into a churn of milk.

"Did you take it out?" asked the farmer.

"Of course not," answered the boy. "I put the cat in."

"The new patient in Ward B is very good looking," said the nurse.

"Yes," agreed the matron, "but don't bother to wash his face. He's already had that done by four nurses this morning."

"Thanks, very much," said the vicar, as little Tommy handed up his offering for the harvest festival. "I must call round this afternoon and thank your mother for these eight beautiful apples."

"P-please, sir," stammered Tommy, "would you m-mind thanking her for t-twelve apples?"

She: "You used to call me sweetheart before we were married. Now you don't call me anything!"

He: "That shows my self-control."

Oscar the Operator, being an observant young fellow, announces that in a restaurant, one man's meat is another's croquette.

A Verbal Reply

The dinner guest's nose was exceptionally large, and Father had noticed Willie staring at it. Expecting the boy to make some frank and outspoken comment, he gave him a disapproving glance.

"That's all right, Dad," came the reassuring response, "I'm not going to say anything. I'm just looking at it!"

There was an accident on a suburban highway recently, just a simple one involving a lady driving north and a gentleman driving south. The cars collided head on. Both drivers climbed out. The lady was very apologetic. "It was all my fault," she said. "I was away over on the wrong side of the road. I can't imagine what I was thinking about. It was entirely my fault."

The gentleman stopped her with a courtly gesture. "Not at all, madam," he replied gallantly, "not at all. I saw you coming for half a mile back, and I could easily have turned off on at least two side roads and gotten out of your way."

THE 100% SUCCESSFUL

ELECTRIC BROODER

MAKOMB DE LUXE

This is the electric brooder that not only provides convenience and efficiency but is also amazingly economical. It is absolutely satisfactory from every standpoint and is pleasing flock owners wherever electric power is available. Positive automatic temperature control. No pitting, arcing or radio interference. Heavy insulation conserves heat and there is no wiring in canopy. Guaranteed heating element. Legs are adjustable from 7 to 10 inches. Write for the facts on Makomb's De Luxe Electric—and the complete catalog of Makomb Poultry Equipment.

MAKOMB

Poultry Raising Equipment

GLOBE AMERICAN CORPORATION, KOKOMO, INDIANA

"World's Largest Manufacturer of Brooders"

Certified Sewage Disposal

Half a System is Not Enough!

The septic tank alone is NOT a sewage disposal system. Nor will the addition of make-shift drainage give you the protection you should have. Only by combining a properly designed septic tank with adequate drainage can you be sure of safe, dependable service.

The San-Equip Sewage Disposal System is a complete system. All the waste from bathrooms and kitchen are properly disposed. The San-Equip System is "Certified." Yet San-Equip costs no more than you may pay for cheaply-built, inefficient disposal.

Be safe! Send for complete information to San-Equip, Inc., 784 East Brighton Ave., Syracuse, New York.

San-Equip

SEWAGE DISPOSAL SYSTEMS

The LAUSON

Electric Jacks

This No. 2A furnished with universal mounting bracket to accommodate motor, one you have or we will furnish, with V pulleys and V belt for drive.

The No. 2B has flat face pulley for drive from remote motor.

Also the Standard No. 3 with motor direct-geared in enclosed housing.

No. 2A with "V" Belt Drive

Full Line Complete Water Systems

Write for literature on either or all

The Lauson Corporation
700 Michigan, New Holstein, Wis.

Shearing Sheep

(*Continued from page* 19)

ture and the inclusion of tags, dung locks, or floor sweepings usually result in loss to the grower.

Untied fleeces hamper grading and increase the cost of handling in central markets, and consequently buyers offer lower prices for them. Fleeces should be neatly and securely tied up, flesh side out, with proper twine. Sisal and jute twines should not be used since removal of fragments of them from wool is an expensive operation, and as a result wool containing these fibers cannot command full market prices. Black fleeces, dung locks, tags, and wools which are very seedy or burry should be packed separately. The wool should be packed in very closely woven jute, hemp, or paper-lined sacks. The wool should be absolutely dry at shearing and should never, subsequently, be permitted to become wet. For excessive moisture in conjunction with dirt normally present, may cause wool to heat and become discolored and musty. Buyers avoid musty wools or offer extremely low prices for them.

A simple box for tying up a fleece can be made from two boards 12″x36″ and three smaller ones 12″x12″. To one of the 12″x12″ pieces the remaining four pieces are hinged, the short ones on the ends and the longer ones on the sides. Three notches or grooves to hold the ends of the twine are cut in the ends of the short boards and in the center of the outside edges of the long boards about three inches apart. A fleece is tied up in this box by placing the box on a bench with ends and sides lying flat, three strands of twine fastened in the notches in each direction. The fleece is placed on the open box with the flesh side out, the ends and sides of the box drawn upright and held by means of two small iron rods which drop into notches in the sides, thus holding the sides together and at the same time preventing the ends from dropping outward. The ends of the twine are then brought together and tied and a neatly tied fleece results.

Modern Tourist Homes

Many farm housewives will add to the family income this summer by keeping tourists overnight. Travellers in West Virginia have found that it pays to look for the standardized yellow sign "Tourist Home" which welcomes them to farm houses which have been scored by the extension division of the college of agriculture. Out of the one hundred points on the score card sanitation and bath room facilities count 20 points. A home must score 85 points to be rated as a Mountain State Tourist Home. Most of those so rated have both running water and electricity and homes which do not have both of these or do not plan to install these conveniences within a short time are not encouraged to apply for this rating as they are the two things that travelers universally desire.

NEW WAY TO CHURN

Thousands are changing to this simple, convenient, modern way to churn. It's the famous DAZEY principle adapted to electrical operation. Ends the drudgery. Just turn the switch. Made in 2, 4, 6 and 10 gallon sizes. Write today for catalog and further information.

DAZEY CHURN AND MFG. CO., Dept. 27
Warne and Carter Avenues, ST. LOUIS, MO.

IDEAL
LABOR SAVING HAY HOIST

Takes the place of man and team operating hay carrier, stacker, etc. Furnished either Single Drum, or, with Pull-Back Drum for returning empty carrier. Operated with any motor or engine from 2 H.P. up.

UNIVERSAL HOIST & MFG. CO.
200 East 14th Street Cedar Falls, Iowa

Write for complete details —today.

Fully guaranteed— 10 DAYS TRIAL.

Then and Now

By John H. Barber

ELECTRICITY? Electric Refrigeration? What! Go into all that expense? I guess not! Why, I have a gasoline engine pumping water and light my house with carbide. Get 200 or 300 lbs. of ice every day at the plant.

This was a year ago.

Now—I have electricity on the farm, lights, water, electric refrigerator, lights for my own house and all my dairy buildings, besides in my three cottages. Water on tap in all four houses and the cattle troughs.

Refrigerator supplying plenty of ice for all purposes. Clean, sure, and, best of all, at less expense than before. To show you—

My ice alone cost from $35 to $40, per month, to say nothing of the time spent daily in driving to the plant after milk delivery, the wear on the truck and the work of handling and cleaning it.

Now, my whole bill, lighting, water, and ice, including even interest on the investment and installation cost, amounts to scarcely $20 per month. For that we have hot water always on tap in dairy house, conveniences in the house, and frozen buttermilk or ice cream any day we want it.

Electricity on the farm? Ask my wife, or any of my customers who receive their milk ice cold at the door. Or, visit my dairy plant any time, any day, and see the actual result of electricity on the farm.

Andis Animal Clipper

THE NEW ELECTRIC

Fast—clips udders and flanks, 8 to 12 cows an hour. Weight only 3 lbs. No cables or stands. See dealer or write for full details.

ANDIS CLIPPER COMPANY
642 LAYARD AVE...RACINE, WIS.

Plenty of WATER INDOORS and OUT with **KEWANEE** HIGH PRESSURE WATER SYSTEMS

With a Kewanee every tap and faucet—both indoors and out—will deliver a full, strong stream wherever it is wanted. Any system is better than the old hand pump and pail. Kewanee **High-Pressure** is an equally big improvement over an ordinary system.

Every model and size contains features of design, material and workmanship which guarantee many extra years of service with extremely low cost for operating and upkeep.

Most every day we get letters from users telling us about Kewanee Systems that are still working perfectly after 10, 15 and 20 years and more of continuous operation.

WRITE for Helpful Bulletins
KEWANEE PRIVATE UTILITIES CO.
464 Franklin St., Kewanee, Ill.

BUY DURO NOW

And settle the water supply problem forever—only a few dollars down payment brings fresh running water under strong pressure, piped into your house. Makes possible water in the kitchen, bath, inside sanitary toilet, laundry, water for sprinkling, lawn and garden, live stock and chickens. Write for illustrated electric water system catalog.

THE DURO COMPANY
537 E. Monument Ave., Dayton, Ohio

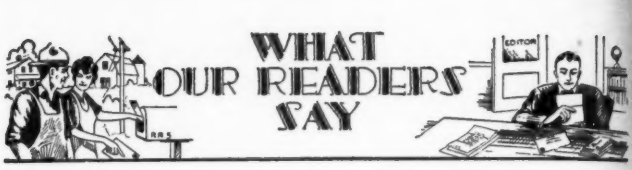
DURO
Automatic Water Systems

MORE PROFITS *from Chicks*

For breeders, poultry-raisers, hatcherymen—extra quality, extra profits in Petersime Electric Hatched Chicks. Petersime Incubators give unmatched results — lowest operation costs—built in five sizes from 1,400 to 15,984 capacities.

Write for NEW FREE Catalog. No obligation.

Ira M. Petersime & Son
EF-34, Gettysburg, Ohio



Reduces Drudgery

What one electrical servant does so many different things and does them so well as the vacuum cleaner? It keeps the appearance of the house neater and cleaner, takes off much of the drudgery and does it in less time. Gradually it adds new jobs to its numerous ones.

Attach the suction hose and clean the attic windows, sleeping porch or elsewhere of chamber flies. On cool mornings common house flies clustered in porch or window corners can easily be gathered in.

FRANCES C. PFAFF,
Portageville, N. Y.

• • •

A Pleasure

In this day and age the conveniences on the farm are not only enjoyed by men but by the women to the same extent. Of these electrical conveniences the washer is my favorite. I no longer dread wash day with this handy servant. No more aching backs or dirty clothes. Why should anybody waste away their health and suffer for it the rest of their lives when this easy way is possible? I feel certain that everybody having a washer thinks it a pleasure to work with this wonderful servant.

Sincerely yours,
MISS GERTRUDE SIEMERS,
R. 1, Cleveland, Wis.

• • •

There's A Reason

Hurrah! No more backache caused by the worst kind of drudgery, scrubbing soiled clothing on a board with your hands. When I was a little girl wash day was the worst day on the calendar for me. Everybody had to get up bright and early to get through with the family wash by night. Finally the electric washer came to our aid, doing as much work in five minutes as we could do in several hours. Besides saving the drudgery, it saves our clothes and will soon pay for itself in this way.

ETHEL PARKER,
Masonic Home, Richmond, Va

Hail to the Pump

Of all the electrical appliances I have as servants in my farm house, the electric pump seems to stand as the foundation for so many things. It is the means of furnishing water to the first floor, second floor and basement, besides all the water to the barn. It simplifies the washing with the electric washer and supplies water for the bathtub, lavatories, toilets and sinks. By it all water for both food and drink is provided for in pure and abundant supplies.

So I say all hail to the electric pump!

MRS. ED. H. GARDNER,
R. F. D., Goshen, Ind.

• • •

A Meritorious Servant

I'm the favorite servant of my mistress because I'm so conscientious, so stingy—almost penurious. I stay home and work both day and night to save her family's health, pocket-book and servants' wages.

I'm quiet, sly, clever and trustworthy. I need no watchful eye to keep me working.

I am quite commodious, being continually sandwiched on the farm with dressed fowls, lamb, beef, fresh cleaned vegetables, eggs, milk and desserts, thus giving my mistress time for recreation and hospitality, for wherever I am hospitality reigns.

I am Miss Electric Refrigerator, servant of

MRS. HELEN EVANS,
Hunkers, Pa.

CLASSIFIED ADVERTISING

The LYON ELECTRIC COMPANY manufacture electric poultry equipment exclusively. Long, practical experience in the highly developed California rural electric field enables us to furnish quality devices at reasonable prices. The LYON line includes: Brooders—Incubators — Egg Testers — Burglar, Temperature and Power-off Alarms — Heating Elements—Thermostatic Supplies—Time Switches—Wiring Supplies. Write for catalog today. LYON ELECTRIC COMPANY, 2075 Moore Street, San Diego, California.

MERCHANDISING SUPPLEMENT
Electricity on the Farm

Vol. 4 APRIL, 1931 No. 4

FARM WIRING

One of the most commonly encountered faults in farm wiring layouts is inadequacy. Due probably to the desire of the farmer for economy, many installations are made which are neither adequate nor well designed.

Three things are thereupon likely to result: (a) frequent trouble calls, (b) frequent complaints of poor service to the power company, and (c) curtailed use of current.

Where the farmer has some dependable agency to call upon for advice, and where such advice is followed, the wiring installation will be well made, and provision incorporated for future uses of current which may develop from time to time.

The subject of farm wiring is one of the most important of the many problems arising in rural electrification, and there is need for dissemination of information of a technical nature on the subject.

Starting in this isue of the Merchandising Supplement, a series of articles will be published on "Taking the Kinks Out of Farm Wiring," by H. S. Hinrichs, formerly in charge of the Rural Electrification Project at the Kansas State Agricultural College, and present chairman of the Farm Wiring Committee of the American Society of Agricultural Engineers. Mr. Hinrichs is considered an authority on the subject, and has done considerable work with the Committee on the Relation of Electricity to Agriculture. This series will be well worth the careful study of rural service men, for it will deal with the problems which are continually arising in their work.

Waggoner Now Director of Research for *"Electricity on the Farm"*

Widely Experienced in Agricultural Engineering Field; Directed Texas Rural Electrification Project

J. E. WAGGONER recently Sales Promotion Manager of Oliver Farm Equipment Company, of Chicago, has been appointed Director of Research of ELECTRICITY ON THE FARM, taking effect April 1st.

He is widely-known in the fields of rural electrification and agricultural engineering with which he has been identified for the past twenty years. He thus brings to this publication a varied and useful experience.

Mr. Waggoner holds the first degree of agricultural engineering ever conferred, received at Iowa State College in 1910. He graduated from the same institution with a degree of B.S.M.E. in 1908.

J. E. Waggoner

His first professional connection was with the Mississippi State College where, in 1910, he installed the Department of Agricultural Engineering. The following year he organized the International Harvester Co. Service Bureau, carrying on agricultural extension work for that company for five years. Until 1926 he was Advertising Editor of the International Harvester Company.

From 1926 to 1928 he was Director of the Texas Rural Electrification Project. Following this period of important research activities in the Southwest, Mr. Waggoner was brought East to serve as Manager of the Public Relations Division of the Delco Appliance Corp., of Dayton and Rochester.

Mr. Waggoner will make his headquarters at the Chicago office of ELECTRICITY ON THE FARM, 30 N. Michigan Ave., but his activities will be national in scope.

By H. S. HINRICHS

THE problem of securing an adequate, safe and economical wiring installation, from the farmer's standpoint is aptly stated by Mr. M. C. Albright, proprietor of Oakwood Farms at Athens, New York, in his talk "My Experiences with Farm Electrification," over Radio Station W. G. Y., Schenectady, New York, January 26, 1931. Mr. Albright said in part:

H. S. Hinrichs
Chairman, Farm Wiring Com., A. S. A. E.

"We had a general idea of the lighting and appliances we would want but knew nothing of wiring and installation. Our first wiring and service were inadequate and when we installed a milking machine found it necessary to put in an entirely new service.

Five years' use of minor appliances proved their value and influenced us to equip the home electrically from toaster to range, and the farm from soldering iron to seven and one-half horsepower portable motor, and once more we found need for a heavier service, and installed a three-wire system and a two hundred ampere entrance switch.

Our wiring experiences have been interesting *but more expensive than it would have been, could we at that time have had the advice of a rural service specialist, such as are now furnished by the power companies, and who are glad to advise and plan for a satisfactory wiring job and appliance installation.*"

These brief statements by Mr. Albright become either a complement or a challenge to any Power Company supplying electric energy to rural districts, depending upon whether or not such advisory service regarding farmstead wiring is supplied by that Company.

Experience has shown that the Power Company is of necessity mutually interested with the farm customers it serves, in the wiring of the farmstead, regardless of whether the Company has its own wiring department, or leaves the actual installations to some other organization or individuals. Such interest cannot be escaped. Certainly it is not evaded when no active cooperation is given.

When the wiring of the farmers' premises is allowed to be provided in any way that it may, then the number of inferior, inadequate installations will be greater than where definite, carefully directed supervision is provided by the Company. Such faulty installations result in more frequent trouble calls or in more complaints of poor service improperly blamed on the Company. More than either of these, however, is the greater resistance to additional uses of electricity on the part of the customer because of the repeated wiring expense when each new appliance is considered. The Company therefore shares in the cost of supervising the farmstead wiring, either by actually providing some such cooperation or in decreased customer satisfaction and kw. hr. sales.

This problem is quite generally recognized by those responsible for the rural development of the re-

spective Power Companies. The means of meeting the problem are not so clear cut. No one plan can be successfully applied to every community. In some places electrical contractors are doing an excellent job in improving wiring conditions and finding a remunerative business for their effort. In other communities, there are contractors who would gladly cooperate in such an enterprise. In still others, the Power Company's own employees are looking for better ways and means of meeting this important problem in rural electric development. It is the sincere desire of "Electricity on the Farm" in this farm wiring section to outline those plans which have been successfully used in providing better farmstead wiring to the mutual advantage of the farmer, the Power Company and the electrical wiring trade. Questions and comments for this section are solicited and should be sent directly to the editorial conductor of this section.

Rural Electric Sales School Held in Kansas City

THE first Rural Electric Sales School, under the direction of the Middlewest Division of the N. E. L. A., was held on Feb. 26th-27th at Kansas City, Mo. There were 168 registered.

In the absence of Stanley Taber, Arthur Huntington of Cedar Rapids, Iowa, spoke on the beginning of rural electrification. Incidents which lead to the birth of the Committee on the Relation of Electricity to Agriculture were brought out by Mr. Huntington.

Others who spoke at the morning session on the first day were E. H. Aberdeen of the Westinghouse Electric & Mfg. Company, and Professor J. B. Davidson of the Department of Agricultural Engineering of the University of Iowa. Mr. Aberdeen, who spoke on "Selling the Farmer Electric Service," stated that radio is of vital interest to the farmer, not only from the standpoint of entertainment but for the purpose of securing the latest market prices and other information of interest and value to him.

Merchandising Topics Presented

At the afternoon session the speakers included: H. S. Hinrichs of the Kansas Power & Light Company, who spoke on farm wiring; Mr. Thorne Browne who, in the absence of Mr. C. A. Nash, presented his paper, and C. H. Chase, Secretary of the Iowa Implement Dealers Association, Ames, Iowa, who spoke on the cooperation of implement dealers and power companies in selling merchandise to farmers. Also, H. G. Campbell of the St. Louis office of the Westinghouse Company,, outlined methods for securing prospects and following them up. He stressed the value of advertising owing to the great distances salesmen must travel and the difficulty of making frequent calls. W. S. Clevenger of *Electricity on the Farm* presented a paper "On Advertising as a Selling Help in Developing Rural Line Load," by Mr. K. H. Gorham, advertising manager of this magazine.

In the evening a demonstration and talk was given by Professor R. R. Parks of the University of Missouri, who had his rural electrification demonstration truck with him. Following this, a two act playlet on rural electrification was presented. The first scene in the play showed an elderly couple in their farm home where electricity was not present and kerosene lamps were used for lighting. During this scene they are visited by a representative of a power company who convinces them of the desirability of securing electric current. The second scene shows the same home five years later, after it has been completely electrified. The contrast brought out in this way was very interesting.

Sales and service problems were given a place at the session. A great many of those present participated in the various discussions.

Kirk Fox, Editor of Successful Farming gave a talk on the advantages of electricity to farms at the

(*Continued on page S* 10

RURAL ELECTRIFICATION Salesmen's Forum

Conducted by TRUMAN E. HIENTON

The Farm Work Shop

"A STITCH in time saves nine" is a well known proverb which has a distinct application to the fourteen and one-half billion dollars worth of machinery and buildings on the farms in the United States. The important feature of this proverb to power company representatives and dealers in electrically operated equipment is that, in many cases, farmers employ electric power and equipment in making this stitch.

Prompt repair of machinery is so important in the minds of many farmers that a well-equipped farm shop has become an established unit of the building group on most farms where tractor power and machinery or large units of animal-drawn machinery are utilized. Electric power aids in speeding repair work by operating drills, grindstones, forges, emery wheels, saws, or soldering irons in these farm shops.

Increases Property Value

Farmers recognize the value which accrues to their farms by having a well painted set of buildings both from the standpoint of preservation as well as that of decoration. Groups of farmers now are cooperating to buy their paints and to reduce the cost of their application by the use of spray paint machines. Electric power has been used to operate a machine of this kind in a community in central Illinois.

According to the 1925 U. S. census of agriculture there were 505,933 gas tractors on farms in the United States or slightly more than one per cent of the total farms with a tractor. In the state of Indiana there were 23,567 tractors on January 1, 1925 and 26,676 on March 1, 1929 which represent an increase from 13 per cent to 14.6 per cent during that time. This increase is without doubt due in a large measure to the added popularity of the tractor produced by the introduction of the general purpose type during that period. When available, 1930 census figures will no doubt show similar gains.

Additional Repair Items

The farm auto truck and automobile are other machines which are adding to the cost and labor involved in the farmers' annual machinery repair items. Eighty-two per cent of the farms in Indiana owned automobiles in 1929 and 12.2 per cent owned trucks.

The increasing use of the tractor, truck, and automobile combined with that of the improved and perhaps more complicated farm machinery designed for use with tractor or large units of animal power is playing an important part in the establishment of farm shops for their service and repair. An accompanying illustration shows the interior of such a shop on the farm of Warren T. McCray of Newton County, Indiana, in which electric power is used to operate the blower on the forge, a table saw, press drill, and emery wheel. In a somewhat similar case in Wells County, Indiana, a newly constructed farm shop resembles to a considerable degree a two-car garage in appearance. One end of the structure is devoted to the housing and use of tools similar to those shown in the illustration while the other may be used as a garage for a tractor or other motor vehicle. This section

is provided with a pit located so as to be beneath the crankcase of a tractor, truck, or automobile for ease in service when any of them requires it.

Systematic Repairing

A very pertinent comment on the value of repairing farm machinery and the part of the farm shop in this work has been made by Professor J. B. Davidson, head of the department of agricultural engineering of Iowa State College and senior author of a well known textbook on farm machinery. This comment is contained in bulletin 260 of the agricultural experiment station of that institution and states that "While the housing of farm machinery is desirable, systematic repairing has more influence on the life of farm machines. A well-equipped farm shop is a definite aid to systematic repair of farm machines." The exact annual cost of repairs according to the studies reported by Professor Davidson show a variation from 1 to 5 per cent of the first cost of the machine, with that for tractors placed at 2 per cent. Assuming an average cost of 2 per cent on farm machinery values reported in 1925 the cost of repairs for all farm machinery in the United States amounts to $53,834,072 annually.

The winter or early spring is the logical time for the overhauling and repair of farm machinery so that the motor driven tools in it are probably in greatest use at that time. Equipment should be brought into the shop and critically inspected to determine necessary repairs and adjustments to allow time for securing repairs. Where this is done machinery will be ready when needed and delay may be avoided in planting, cultivating, or harvesting a crop, which often results in increased profits.

J. L. Venable, Manager of Kendall Farm, Indianapolis, Indiana, grinding sickle blade with the use of an electrically operated grindstone.

Needs for these motor-driven tools in the farm shop are usually most acute when a machine which is in operation requires immediate repair or cutting edges need sharpening. It is not always possible to predict in advance the exact time when these tools may be needed so that their purchase and use is by no means limited to the winter and early spring season. In fact, it might be expected that the demand for such items as grindstones or emery wheels would be greatest during summer months just preceding the harvest season when mower sickles and ensilage cutter knives are being sharpened for use.

Individual Shop Requirements

The number and kinds of tools which will be purchased for use in farm repair work will depend to a considerable extent upon the size of farm and type of farming followed. The owner of a small farm may be content with a hand operated grindstone which reposes in one corner of the wood shed or wash house except when in use. His neighbor with electric service on a larger farm may have a portable motor to run his grindstone or emery wheel in one end of the garage or one corner of the barn. He may even have an electric soldering iron and a motor driven portable drill. Another neighbor with the same size of farm but who has more of a mechanical bent will very likely have a farm shop on his farm. This may be one-half of a two-car garage, one end of a machine shed which has been enclosed, or it may be a separate building with facilities for storing his tractor and some of his machinery. This shop will in all

probability be equipped with a stationary drill, which may be used either as a stationary or portable unit, a grindstone or emery wheel or both, a power saw, forge, and an electric soldering iron. His equipment with the exception of the last two items may be driven by one motor by belt directly or through a line shaft, or it may be driven by direct connection.

Motorize Equipment

Many of the tools which a farmer will use in his farm shop are now available equipped with individual motors. The amount of use which he will have for each tool will determine to a considerable degree whether he will purchase the tool with an individual motor or a separate motor and use it on several tools. On many farms the farmer will purchase the separate motor in order that he can use it for operating a number of farm machines the use of which is very seasonal, such as the fanning mill and sausage grinder. From the standpoint of the farmer using several tools which can be operated by a ¼-hp. motor, it will undoubtedly be more economical for him to operate them with a small separate motor by belt drive or with individual motors direct-connected, than it would be to drive them from a line shaft powered by a larger motor.

Professor Harry L. Garver of Washington State College reports in his bulletin "The Farm Shop" that "The energy necessary to turn a common line shaft in a shop will of course vary, but may require as much as a horsepower to turn it at full speed in cold weather while the oil is stiff." Results of tests reported show that 280 watts were required to operate one line shaft and 140 watts for another. The first was driven by a ¾-hp. motor and the second by a 3-hp. motor. In each case the power required for the line shaft was obtained by deducting that used by the motor idling from that required by the motor to operate the line shaft without load. Similar figures obtained by the author on a line shaft operated by a 5-hp. farm utility motor showed a power demand of 240 watts for the line shaft alone. These figures bear out the previous statement regarding the economy of using small motors to operate the smaller tools directly by belt or direct connection.

The place of the motor-driven line shaft in operating tools seems to be in the larger farm shops where ample room is available for its installation so that it will be out of the way and so that the operation of the tools need not be hindered nor made hazardous by belts. The size of motor required will depend upon the tools which are to be driven from the line shaft and the frequency of their use. The common size of motor used for this purpose is one horsepower. This size is adequate for ordinary tools including a small saw which should be belted directly to the motor if possible. Care exercised in securing proper alignment of bearings for the line shaft and good lubrication will materially assist in lowering the power consumed by it.

Current Consumption Important

The amount of current used by these motor-driven tools is naturally an important item to the power company which provides service to farms using such equipment. Figures reported by the Agricultural Engineering department of South Dakota Agricultural College show that 52.1 kw-hr. were used in one year by a 1-hp. motor which operated a washing machine, meat grinder, emery wheel, and electric drill. A 3-hp. motor on another farm which operated a drill, wood lathe, grindstone, small circular saw, large meat grinder, two or three emery wheels, and a buffer through a line shaft also used 52 kw-hr. during one year. On a farm in southern Indiana where a ¼-hp. portable motor was used to operate a drill, emery wheel, and grindstone 26 kw-hr. were used during 1930.

It is evident from the figures mentioned that the motor-driven tools which are a very important aid to the farmer may not be as

important to the power company serving him. However, if the figures reported above are a true indication of the current consumption that may be expected, even this small amount of current used should be recognized as worth while. The consumption on the Indiana farm will equal and in many cases exceed the amount of energy used by a washing machine. Further, the value of the use of these tools to the farmer is so great that they may become an inducement to the use of additional equipment.

Figures are not necessary to convince farm people of the necessity for painting their buildings. The general importance of preventing unnecessary decay through the use of paint is perhaps best illustrated by referring to the valuation of farm buildings given in the 1925 census. The total value of farm buildings alone in that report is listed at $11,746,629,065, or slightly more than 31 per cent of the total value of all farm land.

The painting of his farm buildings is done by the farmer often in a spirit of pride rather than that of a feeling that it was entirely necessary. Because of this fact, buildings are usually painted once in every four or five years and not infrequently by the owner or a member of his family. This work of painting, where done by the farmer or regular hired help has usually been done during slack periods in warm weather. In this way he has probably been financially able to paint more often than as if he had hired all of the labor to do the painting for him.

Investigations were conducted by the University of Illinois on its experimental electric line with the use of an electric-motor driven spray paint machine several years ago. These tests indicated the possibility of using machines of this type not only to reduce the time required to be spent in painting but to reduce the cost below that of contract jobs done by hand. In one comparative test between machine and hand application, it was found that 7 hours time were used to apply the first coat of paint to a house of 1790 square feet painted area with a machine and 55 hours to apply the second coat by hand. The hand painting was done by a man who had had some previous experience in painting. Current

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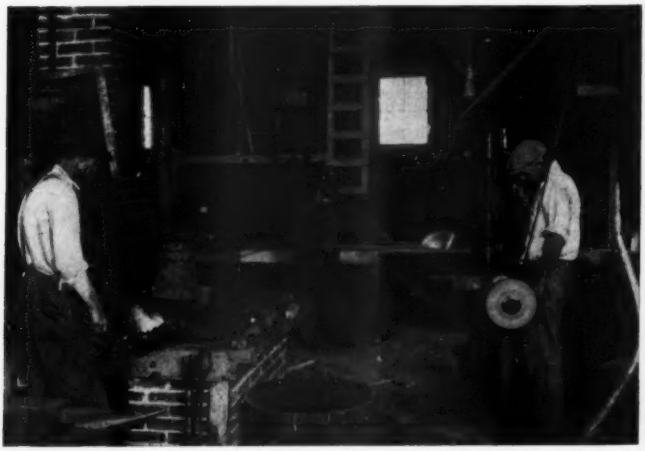


Electrically equipped work shop on farm of Warren T. McCray, Kentland, Ind.

BOB'S PAGE

Devoted to Merchandising of Electrical Equipment in Rural Communities

Conducted by Robt. J. Fulton

Selling Merchandise

THERE are three requirements which are essential in selling merchandise. They are:

1. Confidence in yourself.
2. Confidence in the merchandise you are to sell.
3. Confidence in the company you represent.

Confidence in yourself is a belief in your ability to sell. This necessarily includes having absolute confidence in the merchandise: a thorough knowledge of the merchandise and the ability to demonstrate it, and a full realization that you have goods which your prospective customer needs, backed up by the knowledge that the company you represent is fully behind their product.

Let's go into these essential things a little further and analyze them. First, confidence in yourself. This means that you have initiative, and that you have the necessary backbone,—you wouldn't be a salesman if you didn't have it. Further than this, you are well informed, or should be as to the subject you are going to talk about. You will be able to hold up your end of the conversation with the prospects you interview. You are there to render a service to the person you call upon. Even if he does not buy from you, you are benefitting him and not wasting his time.

If salesmen did not confer a service on the world of business and society, we wouldn't have a job today. The world demands salesmen and recognizes their services. Do not enter into an interview in a half hearted manner, thereby showing lack of confidence in yourself and waiting for your prospective customer to approve of you. Feel and show confidence in yourself from the start. In other words, you must have the necessary backbone.

If a salesman calls upon a prospect, lacking confidence in himself or the merchandise he wishes to sell, what is the result? The prospect will sense his attitude and lack confidence in the merchandise. But, what happens when a salesman goes into the battle with thoughts and feelings of enthusiasm and self confidence? Mr. Prospect is either consciously or unconsciously sold on the salesman's merchandise.

Confidence in Self and Product

Go to each prospect in the right frame of mind, having absolute confidence in yourself and the goods you are to sell. A great many salesmen lack the confidence which enables them to say—"I CAN AND I WILL." Have that confidence that makes you take defeat in one way only,—with flags flying and not with an "about face and retreat."

Confidence in your merchandise is of prime importance and it is obtained in only one way. It is the result of time spent in studying the product and seeing the results it obtains. You can't throw a rock at a man and expect it to turn into a rubber ball when it hits him. Neither can your conversation be just "words."

Confidence in your company simply means that you are convinced of its sincerity and good faith.

In addition to the above requirements: confidence in yourself, your merchandise and your company, there are only two other things necessary in obtaining ultimate

success in merchandising. They are industry and enthusiasm.

Industry is nothing more than the faculty for hard work. Enthusiasm, while not possessed by everyone, is a thing which can be acquired. Concentration or exercise of will power is the best way to obtain enthusiasm in your work. A man who is really interested in something does not find it hard to concentrate on that subject. Think of concentration as a sun glass through which the rays of the sun are focused down to a small spot with power so strong that it burns the thing it touches.

Create the Desire

Remember this: Selling is nothing more than creating the desire in the prospect's mind to possess that which you have. The greater the desire to possess it, the less price enters into the transaction. Selling is hard work. Two percent of selling is inspiration and ninety-eight percent is perspiration. Or, to put it another way, fifty percent is head work and fifty percent foot work.

With head work in selling you cannot win. If you do not plan each day's work and then carry out that plan, you will not succeed. Every successful business is planned carefully and then the plan is put in operation.

To assist you in selling, read this poem every morning:

There's only one method of meeting life's test,
Just keep on a-working and hope for the best.
Don't give up the ship and quit in dismay,
'Cause hammers are thrown when you would like a bouquet.
This world would be tiresome, we would all get the blues,
If all the folks in it just held the same views.
So work every minute, show the best of your skill,
Living always the slogan—
I can—I will.

Douglas Dow Now a City Official

Douglas Dow, formerly farm service adviser and special engineer for the Detroit Edison Company, has recently been appointed Commissioner of Purchases and Supplies for the City of Detroit, Mich. Prior to his connection with the Detroit Edison Company, Mr. Dow was assistant buyer and later chief clerk of the record of research division of the purchasing department. An engineering degree from the University of Michigan and four years' work, including the test course at the General Electric Company's Schenectady plant, constitute part of Mr. Dow's training. Mr. Dow has been active in the electrical industry for years. At the time of his appointment to the city, he was Great Lakes division representative in the Commercial National Section of the N. E. L. A.

Rural Sales School

(*Continued from page S 4*)

second day's session,. Others who took part in the morning session included: A. W. Peterson of the General Electric Appliance Company, who classed the electric range as one of the best load builders; A. J. Cole, Vice President of the Clark Water Heater Company of Chicago, whose talk covered water heating; D. L. Renner of the Iowa Nebraska Light & Power Company, Lincoln, Nebraska, who, in his comments on electric refrigeration, said that his company expects to sell 10% of their customers refrigerators this year; I. N. Downs of the Dempster Mill & Manufacturing Company, and R. T. Roberts of Goulds Pumps both spoke on water systems and water supplies.

At the afternoon session, F. J. Zink of the Kansas State Agricultural College, Manhattan, Kansas, outlined the subject of feed grinding. A technical talk on motors was given by Herbert Hemker of the General Electric Company, and Professor E. B. Lewis of the University of Nebraska spoke on dairy electrification. The subject of poultry was presented by Professor Funk of the University of Missouri. Dr. E. A. White, Director of the C. R. E. A. gave an interesting talk on rural electrification in general.

Westinghouse Organizes Rural Division

Realizing the growing demand for electrical farm equipment and home appliances in the small towns and on farms, Mr. C. E. Allen, Commercial Vice-President of the Westinghouse Electric and Manufacturing Company, has appointed Mr. R. C. Cosgrove as Rural Distribution Manager of the Company's Merchandising Department.

Wide Acquaintance in Field

Mr. Cosgrove graduated from Carnegie Institute of Technology with a degree of B. S. in Commercial Engineering in 1918 and before his recent appointment, was Manager of the Westinghouse Small Electric Plant and Water System Sales. He is a member of the American Society of Agricultural Engineers, the National Committee on the Relation of Electricity to Agriculture, Farm Equipment Committee of the National Electric Light Association, and the Water System Committee of the National Association of Farm Equipment Manufacturers.

To Distribute All Farm Merchandise

The Rural Division will be responsible for the distribution of all the Westinghouse merchandising products sold for use on the farms and in the homes in small towns and rural areas. These products at the present time include electric refrigerators, radio receivers, ranges, water heaters, table and heating appliances, fans, vacuum cleaners, farm light plants and water systems.

The outstanding position of the rural market in the sale of electrical appliances is due to the fact that 30% of the country's 20,500,000 domestic consumers of electricity are located on farms and in towns of less than 10,000 population.

North Central N. E. L. A. Discusses Rural Service

Two Rural Service Round Table sessions were included in this year's program for the annual North Central Electric Association Commercial Conclave held at Minneapolis, Jan. 26-27.

Chairman F. T. Finney of the North Central Rural Electric Service Committee presided and the program included, in addition to reports from the various companies represented, a discussion of machinery and equipment available led by G. A. Rietz of the General Electric Co., an address on Progress by Dr. E. A. White, Director of the C. R. E. A. Prof. H. B. White of the University of Minnesota gave a talk on the Changes in Farm Structures Required by Electricity, followed by a paper on "Electricity on the Farm Magazine, and its relation to Load Building," prepared by Fred Shepperd, Editor, and a discussion of the "Supplementary Methods of Selling the Farm Customer," led by C. P. Wagner.

R. C. Cosgrove

Public Utilities Association to Meet at Excelsior Springs

The 25th annual convention of the Missouri Association of Public Utilities is to be held at the Elms Hotel, Excelsior Springs, Mo., on April 16, 17th and 18th.

As this is the silver anniversary of the Association, one feature of the meeting will be recollection of "old timers." Several of those who have been members of the Association for many years will take part in the meeting.

Prominent Speakers to Address Convention

Among the speakers will be: Paul S. Clapp, New York City, Managing Director of the N. E. L. A.; Alexander Forward, Managing Director of the American Gas Association; Milton R. Stahl, Jefferson City, Mo., Chairman of the Missouri Public Utilities Commission; J. N. Shannahan, Omaha, Neb., president of the Omaha & Council Bluffs Street Railway Co.; Ralph F. Parks, Columbia, Mo., Farm Electrification Expert, Missouri College of Agriculture; Harry Bussman, St. Louis, Mo., president of the St. Louis Electrical Board of Trade, and Judge Harry H. Ramey, of Salyersville, Ky.

Merchandising Committee N. E. L. A. Discusses Farm Equipment

At a meeting of the Merchandising Committee of the National Electric Light Association, held at Cleveland, Ohio, January 12-13, the Farm Equipment Sales Committee discussed farm equipment. The object of the meeting was to review what had taken place since the meeting on November 20th.

The first subject discussed was the report of Mr. K. H. Gorham's sub-committee, which was appointed to prepare a classified directory list of the various companies manufacturing electric farm equipment.

The second order of business was a report by Mr. Wigsten's sub-committee, which was appointed to prepare a statement of the policies, plans and results of some half dozen of the most successful companies in the development of rural load.

The third question, that of market analysis, was reviewed in very great detail, and as a result of the discussion it was left with the chairman and Mr. Gorham to go into this matter further with the N.E.L.A. and the N.E.M.A. to see if some of the more pertinent information could be obtained from the power companies and made a part of the regular statistical work of the National Electric Light Association.

It was the concensus of opinion of the committee members that the questionnaire as drawn up by Mr. Wigsten was excellent, and that upon the basis of this information they could determine the half dozen most successful plans of rural development and put them out in such shape that they would be of real interest and assistance to the member companies.

Buffum Motor Heating Systems

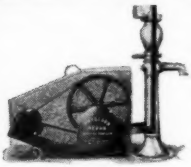
The F. G. Buffum Mfg. Company of Louisiana, Mo., announce production of a motor heating system for automobiles, trucks, tractors and aircraft motors. The units are equipped with 100-watt heating elements. The water heater is installed in the rubber hose connection between the motor and radiator, while the oil heating unit is located in the oil pan.

Outdoor Meter and Switch Boxes

Those preferring meters installed in convenient outside locations so that they are accessible for metermen at all times will be interested in the line of "Utility" outdoor weather-proof meter boxes manufactured by the F. D. Kees Mfg. Co., of Beatrice, Nebr.

These boxes may be had in various sizes to accommodate a single meter; meter and switch; two meters, transformer, and switch; or other wiring arrangement. This company are also makers of metering transformer housings both for outdoor and indoor use, tool cabinets, etc.

BRILLION-BEVAN

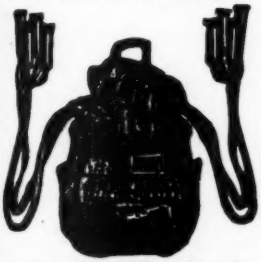


Line of
Electric Farm Equipment

Electric Pumpers
Pump Jacks
Water Systems
Electric Farm Grinders

BRILLION IRON WORKS
Brillion, Wis.

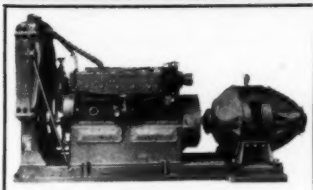
Blue Ribbon Electric Milker



A Portable Milker Requiring No Installation

The "Blue Ribbon" is a self-contained milker, requiring no pipe lines or extra equipment of any kind. It operates direct from the light socket of either high line or farm light plant. A beautiful catalog and complete information will be sent on request. Write us today.

Electric Products Corporation
7 Bluff Ave., La Grange, Ill.



BIG PROFITS IN BIG INSTALLATIONS

1½ KW to 35 KW AC and DC

UNIVERSAL ELECTRIC PLANTS

Big money lies in the sale of big plants. The Universal line enables you to make large installations of every kind. These self-contained plants are made in a range of sizes from 1½ to 35 KW both AC and DC and in portable, stationary and marine types; in standard as well as special voltages; and for operation with or without storage batteries.

Four, six and eight cylinder gasoline engines are built as a unit with electrical parts especially designed for the engines. Easy starting, smooth running, correct electrical characteristics, unfailing operation and long life are prominent Universal features. Thousands of units in use over a period of years.

The Universal line in itself has proved a highly profitable proposition to hundreds of dealers who sell it exclusively. Others find its range of sizes the ideal complement to a line of smaller household units. A few new dealer franchises are available. Complete information on request to Universal Motor Company, 81 Universal Drive, Oshkosh, Wisconsin.

Universal MOTOR CO.
MOTOR CO.
OSHKOSH, WIS., U.S.A.

Farm Work Shop

(*Continued from page S 8*)

consumed by the 1½-hp. motor on the machine was 8 kw-hr. The total cost to paint the house with the machine including hired labor was $65.25 against $148.48 the contractor's estimated price.

The main objection to the use of the paint machine as pointed out was the initial investment and a suggestion made that several farmers cooperate in the purchase of such machines.

A Novel Experiment

A novel method of cooperation in the use of a spray paint machine was worked out in Knox County, Indiana during the summer of 1930, under the guidance of H. S. Benson, County Agent, and the County Farm Bureau. A spray paint ring was organized the members of which agreed to pool their orders for paint. A membership fee of $2.50 was collected from each member and the organization elected officers consisting of a president, vice president, secretary-treasurer and two directors. This group of officers secured bids from jobbers and manufacturers of paint in that territory.

The successful bidder agreed to loan a spray paint machine to the group and to train two of their men to operate the machine. The spray guns, air hose, paint hose, and several other minor parts were purchased by the ring and the paint company furnished an expert for about 30 days to work with the local men.

Record Proves Success

The success of a venture of this kind is borne out by the fact that at the present time there are 70 members in this ring, 16 of whom have used the equipment. The machine was in operation from August 1 to November 5, 1930 and during that time 23 houses, 17 barns, and 92 other buildings were painted. A total of 276,648 square feet of single coating were applied at a cost of 18 cents per 100 square feet. A gas engine was necessarily used to operate the machine as a small percentage of these in the ring had electric service available.

This type of work offers possibilities for the power company and dealers in spray paint machines to cooperate in territories where a majority of the farms are electrified. The development of lower priced machines of this kind may have eliminated the necessity for such cooperation but, since the use of such equipment is limited to once in 4 or 5 years, sales are more likely to be made to groups of farmers than to individuals.

A list of bulletins which may be of interest in the use of equipment discussed in this article follows:

"The Farm Shop," Bulletin No. 147, State College of Washington, Agricultural Experiment Station, Pullman, Washington.

"The Farm Shop and Tool Equipment," Extension Bulletin 108, Cornell University, Ithaca, New York.

"Life, Service, and Cost of Service of Farm Machinery," Bulletin No. 260, Iowa State College, Agricultural Experiment Station, Ames, Iowa.

Several manufacturers of equipment discussed in the article are:

American Electric Heaters Co., Detroit, Michigan—electric soldering irons.

E. C. Atkins & Co., Indianapolis, Indiana—saws.

Black & Decker Mfg. Co., Towson, Maryland—tool grinders, drills.

Century Electric Co., St. Louis, Missouri—general purpose motors.

DeVilbiss Co., Toledo, Ohio—spray paint machines.

Edison General Electric Appliance Co., Chicago, Illinois—electric soldering irons.

Electric Sprayit Co., South Bend, Indiana—spray paint machines.

Emerson Electric Co., St. Louis, Missouri—general purpose motors.

General Electric Co., Schenectady, New York—soldering irons, general purpose motors.

Howell Electric Motors Co., Howell, Michigan—general purpose motors.

Luther Grinder & Mfg. Co., Milwaukee, Wisconsin—tool grinders.

Marathon Electric Manufacturing Co., Wausau, Wisconsin—tool grinders.

Master Electric Co., Dayton, Ohio—general purpose motors, tool grinders.

O. K. Machine Co., Fort Wayne, Indiana—spray paint machines.

Speedway Mfg. Co., Chicago, Illinois—drills, tool grinders.

Titan Elec. Co., Adrian, Michigan—tool grinders, general purpose motors.

J. D. Wallace & Co., Chicago, Illinois—saws.

Westinghouse Elec. & Mfg. Co. East Pittsburgh, Pennsylvania — soldering irons, general purpose motors.

McDonald Deep and Shallow Well Pumps

The A. Y. McDonald Manufacturing Company, of Dubuque, Iowa, have announced a new line of deep and shallow well power pumps and water systems coincident with their reaching the seventy-fifth anniversary of the founding of the firm. A new Handbook has also been prepared for the purpose of affording in a condensed handy vest pocket edition, the chief items of interest to well drillers and pump men.

G. E. Plans For Refrigerator Sales Campaign

At the fourth annual national convention of the electric refrigeration department of the General Electric Company, held at Cleveland, Ohio, plans for an intensive sales campaign through the year were outlined in detail. This two-day conference, Feb. 26th-27th, marked the launching of a sales drive which is expected to result in the breaking of all previous sales records made by the G. E. Company's refrigeration department.

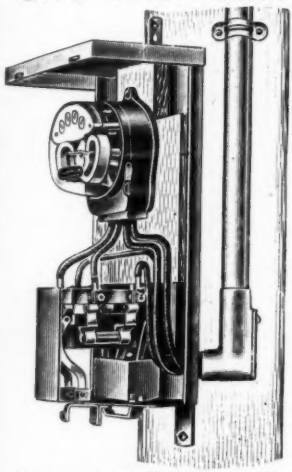
Century Electric Motors

A new line of fractional horse power motors, having mounting dimensions interchangeable, was recently announced by the Century Electric Company of St. Louis, Mo. The motors are made in repulsion start induction single phase, split phase single phase, squirrel cage induction three phase, and DC types. The bearing brackets of this design offer protection against falling objects, dirt, or dripping water. These motors have rolled steel frames, welded steel feet, slotted for belt adjustment, and bearings machined from phosphor bronze castings. They are equipped with Century wool yarn system of lubrication.

New Model 31 "Champion" Washer

The Automatic Washer Company of Newton, Iowa, is now making a new Model 31 "Champion" washer to retail at $79.50. The equipment is of the conventional bottom drive agitator type, with three-van cast aluminum agitator which is operated by a worm and segment gear drive. The washer is direct motor-drive with hardened and ground steel worm and cut gray iron worm gear. It has a reinforced steel connecting rod driven by 3¼ inch diameter eccentric. All mechanism is supported in one-half of heavy one-piece cast iron gear case, assuring perfect alignment. Special rubber mountings and steel motor support reduce noise and vibration to a minimum.

Give This Meter Box a Real Trial



Utility Meter Service Switch No. 3 x 62 with cover removed.

"Utility" Meter Boxes permit economical wiring, are always accessible and make it easy to use electricity for more different purposes . . . because the meter box is installed where it belongs—OUTSIDE.

"UTILITY"

OUTDOOR METER BOXES

are made of steel, attractively lacquered. They are weatherproof, do not absorb moisture, resist fire, and are sold at a reasonable price.

We will gladly send you samples for inspection and trial. Just write us. There is no obligation involved in this offer.

F. D. KEES MFG. CO.

BEATRICE, NEBRASKA

Irrigation of Rice Fields in Arkansas

The water from the Grand Prairie region of Arkansas, which is used for irrigating the rice fields in that state, is obtained from 1,000 or more wells scattered over about as many square miles. The capital invested in wells and pumping machinery is estimated to be at least $5,000,000. The annual cost of water for irrigation in the region, including fuel and electric power, labor, taxes, interest on investment, and depreciation, is estimated to be at least $1,250,000. These figures, although not exact, show that the monetary value of ground-water supplies of the Grand Prairie region is very great.

Universal Motor Opens Branch Office

In order to provide close contact with dealers along the Middle Atlantic seaboard, the Universal Motor Company has opened a branch office at 1205 Drexel Building, Philadelphia, Penna. This office is in charge of J. T. Borton, who is also in charge of a complete Universal display at Washington, D. C., and who is making arrangements for a complete display at Philadelphia.

Trade Literature Received

Master Motors. A 24-page price book, No. 98, superceding No. 97, just published by the Master Electric Company of Dayton, Ohio. Illustrated, contains motor data for the dealer.

* * *

Cooling Milk with Kilowatts. A 4-page pamphlet issued under the above title describing milk-cooling equipment manufactured by the Esco Cabinet Co., West Chester, Pa. Suitable for distribution by power companies.

* * *

Electric Element for Hotbeds. Electromaster, Inc., of Detroit, have issued a 4-page pamphlet describing and illustrating heating element units for hotbeds, seed germinators and propagating benches.

* * *

Arcturus Radio Tubes. An eight-page pamphlet has been issued by the Arcturus Radio Tube Company of Newark, N. J., describing their two new tubes, type 551 Variable-MU and RZ Pentode. These tubes are designed to afford better tone quality, greater selectivity, and simplified receiver operation by means of automatic volume control.

* * *

Esco Electric Milk Coolers. A four-page circular illustrating and describing the new electric milk coolers now manufactured by the Esco Cabinet Company of West Chester, Penna., is available to anyone who is interested in data on this equipment. These milk coolers are made in various sizes to meet different requirements. They are well insulated to insure efficiency and are constructed of materials especially selected to withstand long years of operation in dampness and moisture.

* * *

Westinghouse Catalog. A new eighty-page electrical farm equipment Catalog, No. CV-1878, has been issued by the Westinghouse Electric & Manufacturing Company. The book very attractively illustrates and describes the electric apparatus manufactured by the company. Information on the design of rural electrical systems, general wiring, current rating of motors, current carrying capacity of copper wire, current-voltage drop, intensities of illumination, correct size of motors for farm machinery, cost of operation of large electrical equipment and small electrical appliances, as well as useful rules, weights and measures, are included in the catalog.

New Electric Motor Developed by Howell

A new motor that bears the approval of the Underwriters' Laboratories for Class 1, Group D, which classification covers use in gasoline vapor and air mixture or lacquer solvent and air mixture, has been developed by the Howell Electric Motors Company of Howell, Michigan. The motor is built in either polyphase or single phase design, with a totally enclosed frame or a totally enclosed fan-cooled frame.

COMING MEETINGS

MISSOURI ASSN. OF PUBLIC UTILITIES. Annual state convention April 16, 17, 18, 1931 at Excelsior Springs, Mo. Jesse Blythe, Assistant Secretary, Merchants Bank Bldg., 103 West High St., Jefferson City, Mo.

AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS. (North Atlantic Sec.) F. L. Rimbach, Chairman, Rural Electrification Comm.; O. B. Stichter, Secy. Next meeting at New Brunswick, N. J. Date to be announced later.